

Dental Digest

March 1955

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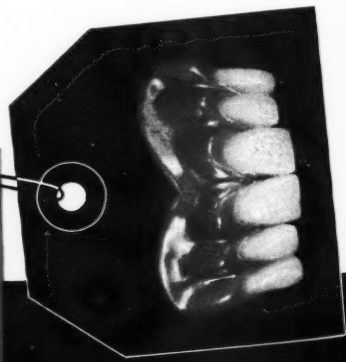
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HAROLD L. HAMBURG, B.S. (City College of New York, 1942), D.D.S. (New York University, College of Dentistry, 1946) is engaged in the practice of general dentistry. He will be remembered for his article in *DIGEST* last year on the subject of the fixed bridge. His present article is NARCOTREATMENT IN GENERAL PRACTICE.

MURRAY N. RUBINSTEIN, D.D.S. (New York University, College of Dentistry, 1924) who has a comprehensive clinical experience in the field of dental reconstruction, continues his serial article on the subject, presenting Part Three of APPROACH TO MOUTH RECONSTRUCTION.

JOHN WILLIAM GIBBS, D.D.S. (Loyola University, New Orleans, 1946) is a general practitioner. Doctor Gibbs is known to *DIGEST* readers for his former articles, the last appearing in April, 1954. In the current issue he presents SIALOLITHIASIS: AS SEEN BY THE DENTIST.

RICHARD M. HERD, A.B. (Indiana University, 1941), D.D.S. (St. Louis University, School of Dentistry, 1945) is an oral surgeon and has been Assistant Professor of Oral Surgery at the University of Louisville School of Dentistry since 1949. Doctor Herd's article is THERAPEUTIC AID IN ORAL WOUNDS. His co-authors, all from the Section on Oral Surgery and Dentistry, Louisville General Hospital, Louisville, Kentucky, are RALPH JONES, D.M.D. (University of Louisville, School of Dentistry, 1951), a general practitioner; DUARD LAWRENCE, B.S. (University of Louisville 1948), D.M.D. (University of Louisville, School of Dentistry, 1952) who specializes in anesthesia; JOE DOUGHERTY, B.S. (University of Kentucky, 1947), D.M.D. (University of Louisville, School of Dentistry, 1951), an oral surgeon; CHARLES HUTTON, D.D.S. (Indiana University, School of Dentistry, 1952), an oral surgeon; KENNETH K. KLINE, (West Liberty State College, West Virginia, 1949), D.D.S. (University of Maryland, 1950); and J. RICHARD ROBINSON, D.D.S. (University of Louisville, College of Dentistry, 1937).

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EDWARD J. RYAN, B.S., D.D.S., Editor**WANDA T. PICKARD, B.A., Assistant Editor**

708 Church Street, Evanston, Illinois

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NARCOTREATMENT

in General Operative Practice

HAROLD L. HAMBURG, B.S., D.D.S., Brooklyn, New York

DIGEST

Based on the assumption that modern anesthesia can be applied as safely as any other routine dental technique by a competent dentist-anesthetist, this article discusses only that phase of anesthesia which is peculiar to general dental practice, with special emphasis on the adaptation of Black's principles of operative dentistry to narcotreatment.

Factors in Treatment

It is a common experience for the dentist to find after careful examination, careful treatment planning, and patient education that he is unable to fulfill the treatment proposed; or he may find himself a victim of endless broken appointments. This is due to the patient's apprehension and dislike of the discomforts of dentistry.

Disturbing Elements—Local anesthesia does not seem to satisfy all patients, nor is pain the only disturbing element in the surgical and restorative phases of dentistry; sight, feeling, and awareness are often equally objectionable to the patient. It is therefore necessary to find a means to remove all the disturbing factors.

Anesthetic Affords Relief—Complete unconsciousness provided only by a general anesthetic, affords complete relief from sight, pain, feeling, and awareness in the dental chair.

Diagnosis

Proper diagnosis is the basic requirement of successful treatment. A complete diagnosis is more important when the use of general anesthesia is

being considered than at any other time. A complete diagnosis consists of (1) a case history, (2) gross clinical findings, (3) oral clinical findings, (4) radiographic findings, (5) pulp testings, and (6) study models.

Case History—Unlike the physician who can examine his patient's physical condition before anesthesia, the dental practitioner must (this is legally all that is required) select his patient, determine the anesthesia, and plan postoperative care from information in the patient's case history. The following questions are essential:

1. General health. Investigate respiratory impairment. Reject or postpone all patients with respiratory difficulty. Confer with the patient's physician routinely.

2. Time of last meal. This is extremely pertinent to anesthesia. Reject any patient who has eaten within four hours prior to treatment.

3. The patient's experience in taking gas. This information will make it possible to select the proper combination of anesthetics. If the patient gives a history of uncontrollable violence under anesthesia, it may be decided to use pentothal as a basal anesthetic. A patient expressing fear of the mask may suggest the desirability of using open drop induction.

4. Allergies. The decision to inject penicillin while the patient is under the anesthetic is frequently made. It is therefore important to know if the patient has any known allergy.

5. Bleeding. All sockets of patients who are suspected of a tendency to bleeding should be packed with oxidized cellulose.

Gross Clinical Findings—Since the signs of anesthesia depend on alteration of the normal body appearance and physiology, it is important to note that the preoperative patient is not cyanotic, is not cross-eyed, is not crippled or palsied, does not have a tic. If any of these conditions do exist, they must be eliminated as possible signs of anesthesia.

Clinical Oral Findings—(1) Examine the tongue and mucous membrane for abrasions and lesions that the operator may be relieved of responsibility after treatment. (2) Note the size of tonsils and pharynx for obstructions. (3) Note loose teeth. (4) Note buccal and lingual cavities. (5) Note loose restorations and poorly inserted restorations.

The patient is not conscious during treatment and will not be witness to the fact that a tooth loosened while he was under anesthesia because it was already loose, or that the tongue was cut from a previous bite.

Radiographs—It is unnecessary to emphasize the importance of x-rays, but the additional value in narcotreatment should be emphasized. The anesthetized patient cannot be consulted for a change in diagnosis; the operator cannot decide whether to perform root canal technique, exodontia, or change from an amalgam restoration to an inlay. Poor radiographic and clinical diagnosis results in unsatisfactory treatment, inadequate compensation for necessary additional procedures later, and anxiety and embarrassment to the operator.

Pulp Testing—This measure protects against nonvitality, especially in the anterior region where there are frequently many silicate restorations.

Preoperative Preparation

The failure of general anesthesia can frequently be traced to inadequate preparation. After the diagnosis has been completed, it is the dentist's responsibility (1) to instruct the patient in hygiene and eating, (2) prescribe medication if necessary, and (3) assist in developing proper psychologic adjustment for the patient.

Preoperative Patient Instruction—

1. Not only must the patient be told not to eat, but printed instructions also should be given him. Emphasis is especially necessary to indulgent mothers who do not consider a bowl of cereal and milk to be food.

2. It is also advisable to suggest to the patient that he relieve himself an hour before the appointment.

3. The patient should also be advised that brushing the teeth before the visit is mandatory. The measure will ensure a cleaner and more visible field in which to work.

Medication—There are four conditions for which drugs are prescribed: (1) temporary insomnia, (2) pain, (3) routine sedation prior to treatment, and (4) medication for the elimination of salivary secretions.

Temporary Insomnia: Many adults and children anticipating treatment spend a restless night, producing an irritable patient. The following medication is recommended to be given to the patient, directly or by prescription, to be taken at bed time:

Dosage for Children

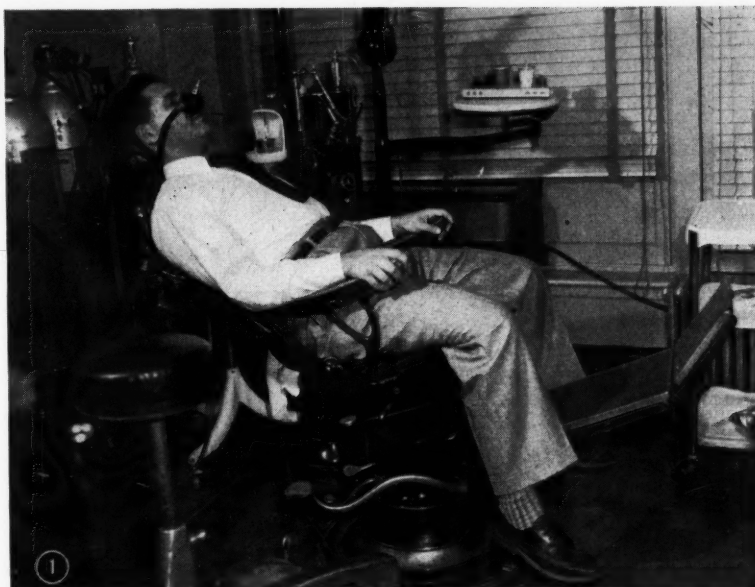
3-12 years, luminol $\frac{1}{2}$ - 1 grain
nembutal $\frac{3}{4}$ grain
nembutal $1\frac{1}{2}$ grains

This prescription is prepared as a powder which can be mixed in apple-sauce to make it palatable for the child. The prescription can also be prepared as an elixir.

Dosage for Adults

phenobarbital $1\frac{1}{2}$ - 3 grains
barbital $4\frac{1}{2}$ - 7 grains
ipral $1\frac{3}{4}$ - $3\frac{1}{2}$ grains

Pain: Patients who are actively disturbed may, for medical or personal reasons, have to defer treatment for one or two days. The following drugs are recommended in these cases:



1. Proper seating. Chair position resists the effect of gravity on the unconscious body.



2. Improper seating. Note that the slipping body of the patient forces the head forward, occluding trachea.

For Mild Pain (Children)
3-12 years, $\frac{3}{5}$ grain of aspirin
 $\frac{3}{5}$ grain of APC

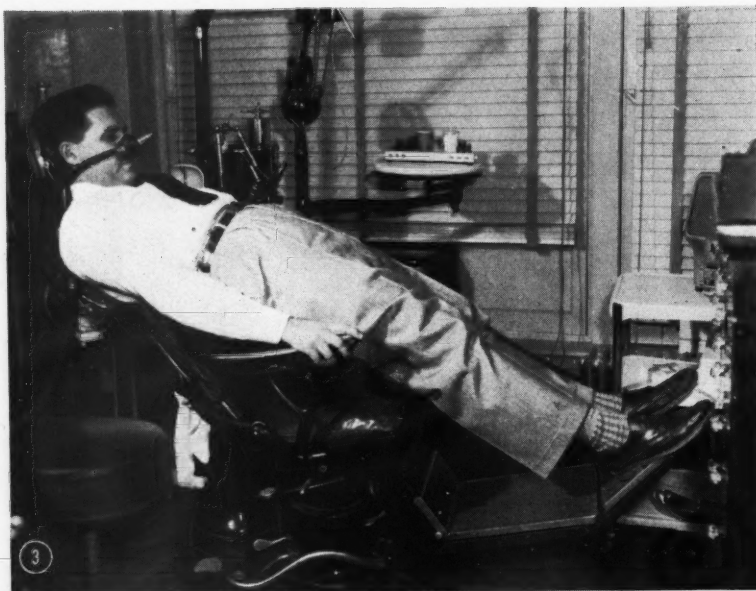
For Mild Pain (Adults)
10 grains of aspirin
10 grains of APC

For Intense Pain (Children)
3-5 years, 1 dram of linctus codeine

5-12 years, $1\frac{1}{2}$ dram of linctus codeine
For intense pain (Adults)

1 grain of codeine sulfate

Sedation: All patients are given sedation one hour before the appointment. This will ensure a pleasanter induction. A sedative dose should do no more than make the patient re-



3. Footboard being used as fulcrum during the excitement stage.

laxed. It is poor treatment to have the patient fall asleep in the office before the anesthetic is used. Such patients present unusual signs of anesthesia with shallow breathing and will become a recovery problem. A barbiturate given orally should not be a substitute for a general anesthetic. The following dosages have been found satisfactory:

Dosage for Sedation (Children)

3-8 years, 1 teaspoon of elixir of phenobarbital

8-12 years, 2 teaspoonfuls of elixir of phenobarbital

Dosage for Sedation (Adults)

$\frac{3}{4}$ grain of seconal

$\frac{3}{4}$ grain of nembutal

Secretions: In addition to being a hindrance to proper anesthesia, a moist field makes treatment difficult. The following is prescribed routinely along with the barbiturates:

1. Children: Atropine sulfate,

1/250 grain

2. Adults: Atropine sulfate

1/100 grain

This is administered about two hours before treatment. The atropine is compatible with barbiturates and they may be administered at the same time.

For Extended Treatment: If treat-

ment of long duration is contemplated, it is better that the atropine be administered by the operator, either intramuscularly or, for immediate effect, intravenously. The dosage is the same.

Postoperative Care—1. The operator or the nurse should not leave the patient until he is fully recovered.

2. At the first sign of retching, the patient is moved forward and the throat aspirated continuously.

3. If the patient faints, oxygen is again administered, the tongue is brought forward, and the patient is given aromatic spirits of ammonia to inhale.

4. The patient remains overheated for fifteen minutes after recovery. Keep him warm and out of drafts.

Procedures

The inexperienced dentist-anesthetist spends a disproportionate amount of time learning the signs and symptoms of narcosis. The basic difficulty in ambulatory dental anesthesia is the difference of the approach and technique in the treatment of the unconscious body compared to the conscious. The conscious patient acts as an extra assistant. Phrases such as "Clear your mouth," "Sit up," "Turn

your head," "Retract your tongue," "Be careful, don't swallow that," "Open wider," are useless to the dentist-anesthetist. He must adapt the technique to replace the patient as an assistant.

Substitute for Patient Assistance—Treating the unconscious patient requires a linking into a continuous chain various positions and mechanical devices to replace the patient's assistance with the awareness that a weak link in the chain endangers the success of the anesthesia and the treatment. The first and most essential link is the seating of the patient.

Seating the Patient—1. The patient is placed in a position of comfort, the head placed in such position that the neck is in a straight line with the body (any other position may interfere with a free airway).

2. The feet are not placed on the floor board but are allowed to dangle on each side in order to eliminate fulcrum during the excitement stage.

3. The head rest is placed at the occipital eminence, the back rest is just below the shoulder blades, mak-



4. King tongue clamp depressing tongue to make the lower anterior more accessible.

ing an obtuse angle with the chair seat.

4. Finally, the whole chair is tilted back, so that the body and thighs of the patient form an equal angle with the floor. A patient so positioned is self contained and neutralizes the displacing effect of gravity on the unconscious body.

Psychologic Preparation—The patient is told that when he goes to sleep the mouth closes and it is necessary to place something in the mouth to keep it open. Explain that in order to prevent him from "slipping" in the chair, he has to be secured (not strapped). He is told that as he breathes the gas he will become dizzy and warm.

Inhaler Adjusted—The nasal inhaler is placed on the patient. Be sure that the nosepiece does not impinge on the nostrils. Secure the inhaler by tightening the inhaling tubes to the head of the patient (80 per cent nitrous oxide is allowed to flow at 5 millimeters pressure from the onset).

Preparations for Treatment—1. The patient is instructed to bite on the mouth prop and the mouthpiece is placed over the mouth, as the assistant places the straps on the patient.

2. Anesthesia is induced, the mouthpiece is removed, the rear of the mouth is packed and treatment is ready to begin.

3. The position of the assistant is behind and slightly to the left of the patient. Her right hand is on the right inferior border of the patient's mandible in order to support the head.

4. The gas machine is placed a left arm's distance from the assistant. With her left hand the nurse will assist the operator and make the occasional adjustment on the machine that the operator requests.

5. The dentist assumes the position he has found to be most convenient.

Narcorestoration—In properly prepared cases, operating under general anesthesia is almost more relaxing than under local anesthesia. But improperly selected cases which are improperly prepared, produce unsatisfactory results and an overstrained dentist.



5. Tongue being displaced laterally to make the lower anteriors accessible.



6. Cotton rolls used to raise the upper lip and maintain the seal of the nosepiece.

Phases of Restorative Procedure Suitable for General Anesthesia

1. Class I, II, III, IV, V cavities
2. Three-quarter and full crown

preparation on bicuspid and anteriors

3. Pulpotomies and pulpectomies
4. Band impressions

Procedures ill-suited for Complete

Anesthesia—1. Occlusal examinations

2. Full mouth impressions

3. Hydrocolloid impressions

4. Wax bites

5. Preparation on second and third molars due to the mouth pack

Aids in Operative Procedure

Operating under general anesthesia is best conducted as a three-man operation: (1) An assistant to aspirate, support the patient and adjust the machine, (2) a second assistant to prepare cement and restorative materials, and provide additional instruments, and (3) the dentist who will do all the work. But since the general practitioner's office usually consists of only himself and one assistant, the following outlined procedure is designed for this type of operation.

Procedure for Dentist and Assistant—It is an extreme advantage to have an air spray to the bur synchronized to the foot rheostat. The air spray is absolutely necessary to provide adequate vision as well as to prevent over-heating of the tooth. Synchronized, it reduces a chore for the nurse. The operator can, of course, select any technique he finds best but experience suggests the following operative technique.

Additional Equipment—Before the patient is seated prepare the following in addition to the usual equipment:

1. Zinc oxide and eugenol in a desiccator to prevent hardening.

2. Cement proportioned but not mixed on two or three slabs.

3. An automatic amalgamator.

4. Capsules for the amalgamator filled with mercury and alloy fillings ready to be mixed. Each capsule to contain enough for two teeth.

5. Properly running handpieces, diamond points, and carbide burs.

6. It is convenient although not essential to have all bur points mounted in separate handpieces. It reduces dropping and misplacing and makes for more convenient handling.

Sequence in Treatment—In the operative technique it is better to work from tooth to tooth with the same

bur, making a minimum of changes. The following definite order of treatment is indicated to prevent contamination of open cavities and inclusion of amalgam in open sockets:

1. Lower excavations of one side
2. Upper excavations of the same side

3. Insert materials

4. Lower surgery

5. Upper surgery

6. Operating in the posterior segment before the anterior

Division of Treatment—Complete operative procedures and surgery are a necessity for all children and some adults. Few adults object to the insertion of restorative materials and in these cases, the dentist may find it less fatiguing to prepare all the teeth and place zinc oxide-eugenol dressings, planning to insert the restorations on the following visit. In the case of gold techniques or any treatment requiring a laboratory procedure, the author excavates and prepares the teeth under a general anesthetic but takes impressions under deep analgesia. In the extremely sensitive or neurotic patient procaine is injected while the patient is completely under the anesthetic. He is brought up to a state of analgesia. Treatment is then continued.

Modifications in Technique

Upper Anteriors—The standard techniques are employed. The use of bur and hand instruments do not require any modification of the Black technique.

Major Difficulty: The nasal inhaler impinges on the upper lip and interferes with access to the upper anteriors.

Suggestions: 1. Large cotton rolls placed in the labial fold will maintain the seal of the inhaler and increase access.

2. Use Ohio Chemical Company nasal tubes.

3. Use either pharyngeal or nasal pharyngeal tubes.

4. Use intravenous anesthesia.

Lower Anteriors—The major difficulty is the tongue which has been brought forward to free the pharynx.

Suggestion:

1. The tongue is displaced laterally or downward rather than back.

2. A King tongue clamp is used which holds the tongue down and forward.

Posteriors—Although any technique can be used, experience has shown that the following method will produce the best results with the least fatigue to the operator:

1. The occlusals of all indicated teeth are opened with a knife edge stone in the order suggested previously.

2. With the same stone in a buccolingual motion the occlusal is enlarged.

3. Final shaping of the cavity is completed with cylindrical stone.

4. The remaining caries is either spooned or removed with a slow running round bur.

5. The same procedure is used for inlay preparations except that a tapered cylindrical stone is used.

Crown and Bridge—The major difficulty is that the mouth is kept in a constant open position and perspective is lost.

Suggestion: The Leff cutting technique is ideally suited. Occlusal reduction is determined by a definite depth of cut. The visible dentino-enamel junction determines the labiolingual depth of cut. This technique uses stones rather than discs which frequently engage and dislodge the throat pack. (Many diamond point manufacturers have a complete description of this technique.)

Modification of Exodontia Technique—General anesthesia has been used as an excuse for poor surgery. The dentist must evaluate his skill in exodontia and if he finds it is limited, he should not attempt it under general anesthesia. Whereas inhalation anesthesia is simple and safe, minor and major oral surgery under it are more difficult for the following reasons:

1. The operating field is limited by the throat pack and the prop.

2. Unlike the hospital operating room, the dentist has the responsibility of the anesthetic and must also

supervise and guide his assistant while concentrating on the surgery.

Surgery Under Third State Of Anesthesia

For the most part the surgical technique is the same as that under local anesthesia. But many surgical techniques which the patient finds annoying in the conscious state, may be completely advantageous when the patient is in the unconscious state:

1. The mechanical impactor may be used routinely prior to forceps to spread the buccal and lingual plates of bone. This will reduce breakage considerably.

2. Flap removals can be used more frequently.

3. Multiple extractions.

4. Penicillin injected intramuscularly in the deltoid muscle can be given more freely, especially for children.

Control of Bleeding—There is usually more postoperative bleeding due to lack of a vasoconstrictor. This is usually of no consequence except in those who tend to bleed excessively and in children where the sight of blood is disturbing. The sockets of children are therefore routinely packed with absorbable cellulose.

Role of the Assistant—Success of surgical treatment under general anesthesia depends as much on proper cooperation of the assistant as on surgical skill. It is the assistant's duty to see that (1) the mouth is fully aspirated, (2) the cheek retracted for visibility, and (3) the mouth pack is in proper position.

Factors in Office Management—In addition to skill in operating, narcotreatment requires proper office management. Adequate office management should include the following:

1. A complete mouth examination.
2. An efficient appointment system

to provide adequate time for treatment.

3. Proper financial arrangements to allow the patient to pay for the total amount of dentistry completed in a short time; a budget system may be employed if necessary.

4. Proper management of auxiliary personnel so that maximum coordination can be gained by dentist assistant.

Summary

The anesthetic of choice, if it can be used, is a local anesthetic. Because of the convenience, simplicity, and thoroughness of procaine and the newer drugs, local anesthetics are desirable. There are children, however, and adults whose mouths are degenerating because the anesthetic that would eliminate apprehension and fear is not available. Narcotreatment is the method of choice in these cases.

332A 9th Street.

Acidogenic Microorganisms in the Mouth

BO KRASSE

Summary and Conclusions

1. The composition of the bacterial flora was found to vary from one part of the mouth to another.

A correlation was found between saliva and plaque material with regard to the number of lactobacilli and *Candida*. No such correlation was found with regard to the number of streptococci. As to the relative proportions of different microorganisms, plaque material and saliva differed widely, indicating that paraffin-stimulated saliva does not always give a representative picture of the flora of the plaques.

Thus in the use of sampling methods it is evident that:

- (a) Paraffin-stimulated saliva may be used in studies of the relationship between caries and lactobacilli or *Candida*.

- (b) In studies of oral streptococci in relation to dental caries it is essen-

tial that plaque material be used.

- (c) Plaque material and not paraffin-stimulated saliva must be used when the interrelationship of several microorganisms to each other and to caries is being investigated.

2. A correlation between caries activity and the number of lactobacilli was present in some series but not in others. The presence or absence of a correlation was observed between caries activities and the number of *Candida*. A probable correlation was observed between caries activity and the number of *Candida*. Caries activity was found to be correlated with the number of streptococci in plaque material, but not with that in saliva. No relationship was found between the incidence of *Str. salivarius* and dental caries.

3. The lactobacillus strains associated with dental caries could well be fitted into the scheme of classifica-

tion adopted in studies of lactobacilli in dairy bacteriology.

The majority of the oral lactobacillus strains were found to be assignable to the homofermentative streptobacterium group. Most of these strains were typical *L. casei*, which type has been thoroughly studied in other fields of research. Heterofermentative lactobacillus strains were also well represented, while 10 per cent could be classed as acidophilus-like.

4. The antimetabolites, 5-fluoronicotinamide, guanazole and protamine inhibited acid formation *in vitro* by pure cultures of oral lactobacilli and of oral streptococci as well as of mixed flora from saliva, both in 48-hour and in 4-hour tests.

Adapted from *Acta Odontologica Scandinavica*, 12:28 (Supplement 14) 1954.

GINGIVITIS—*Gravidarum*

S. GORVY, L.D.S., R.C.S. (Eng.), Johannesburg, Africa

Discussion

As an embryo in utero can be compared with an implanted tumor, it is reasonable to infer that all the tissues of a pregnant woman are reactive, which in fact they are. During this period of total reactivity her tissues tend to become emancipated from her restraining pattern. If they were homogeneous, all these emancipated tissues would start to grow as one. But a biologic system is not a homogeneous entity; it is a heterogeneous complexity of interrelated organs, each with its own reaction rate.

Process Continues in Reverse—Organ tissues which are connected with the "last link" phase in the chain of development must be the first to escape the plan. These, enlarging first, in turn make way for the enlargement of tissues which are connected with the precursor of such a link. The process continues in this manner; that is, in the reverse order as the tissues arose.

Interrelated Influences — The effects of the varying interrelated influences are shown in Figure 1. The adjoining rectangular figures symbolize links in the epigenetic chain of processes; the size differences of the rectangles represent the different rates of reaction. The arrows point in the direction of growth potential. It is evident that the extreme link marked "X" will be the first to expand (as indicated by the shaded area.)

Effects of Isolation from Influences of Surrounding Tissue—It is manifest from the diagram that any section isolated from the influences of

the surrounding areas will enlarge indefinitely. Any bodily explant should then also assume teratological proportions. A segregated link like the liver, artificially perfused, does, in fact, grow chaotically.

Law of Conservation of Momentum—The result of the process may be compared with a single ball striking the end of a row of steel balls (Fig. 2). According to the Law of Conservation of Momentum, each ball, initially at rest, exchanges velocity with its neighbor on either side all along the row and the impact, transmitted to the other end, causes only the last ball to bounce away.

Fundamental Facts—The facts in review are the following:

(a) Tissues of pregnant women possess an active morphogenetic or growth-promoting factor.

(b) Tissues associated with the last link in the epigenetic chain are the first to respond visibly to this factor.

Etiology—Implicit in the fundamental facts exposed is the etiology of gingivitis gravidarum, provided that the gingivae are associated with terminal links. The marginal gingivae; that is, those manifesting the intumescences, are thus associated. They do not appear until the body is comparatively complete and the teeth are in the process of eruption. It is significant that anodontia precludes the incidence of gingivitis gravidarum.

Difficulties—The following difficulties arise:

1. The posterior teeth erupt after the anterior teeth and, the more distal they are, the less the aberration.

2. The time of initiation for the second permanent molar is about the first year; it is about the fifth year for the third molar; it is as early as the fifth month in utero for the permanent incisors, and yet it is in relation to these very incisors that the gingival enlargement is found chiefly to occur.

Solution to Difficulties—The response elicited from tissue by a stimulus depends upon the stage of development such tissue has reached. Different teeth of a series form and are completed at different stages of bodily development. It is therefore conceivable that the substratum of different teeth in the same mouth (though now considered alike) varies intrinsically. In fact, structural variations also exist in different skin fields in normal persons.

Growth Effects Distributed—Compared with the permanent anterior teeth the posteriors, especially the third molars, are slow in growing to completion; that is, about the 25th year for the third molars and the tenth year for the incisors. These molars, therefore, reflect a substratum with a relatively sluggish growth potential. The effects of this are radiated throughout the cells of gum tissue in their immediate environment through orientation of molecules. *Gum enlargement caused by the anterior teeth will rapidly overtake and outstrip or even inhibit that begun by the posterior teeth.*

Competitive Inhibition of Growth

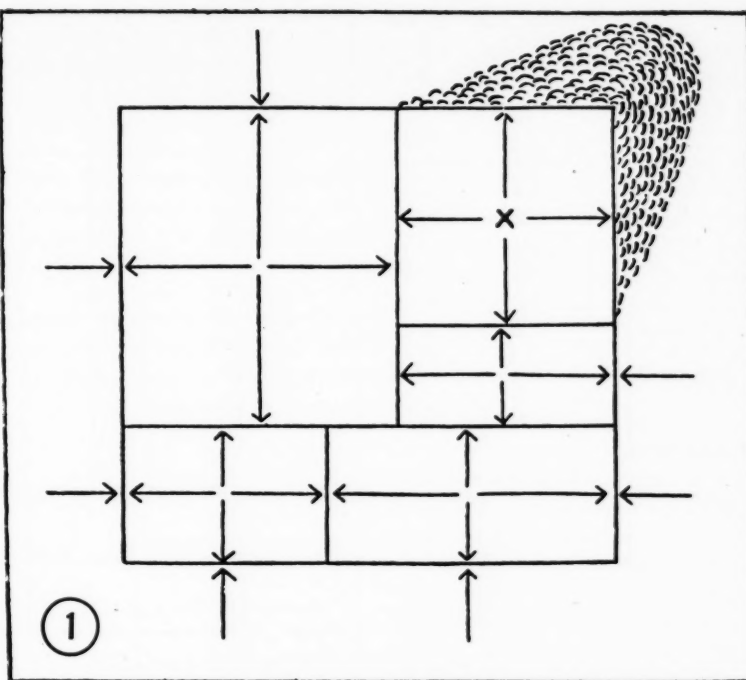
Ultimately, this conception of the inhibition of the growth of one area of gum by the growth of another area is suggested by the view that the

morphogenetic hormone or growth-promoting factor is not only associated with genes but is also closely related to enzymes, activation of many of which may readily be masked or inhibited by certain agents and again be as readily deinhibited by others. Many enzymes contain as part of their molecular structure, vitamin units and typical enzyme and vitamin reactions confirm the described competitive inhibition.

Malonic Acid — When malonic acid is added to a system of succinic acid and the enzyme succinic dehydrogenase, malonic acid competes for possession of the enzyme. The enzyme-malonate complex subsequently inhibits the catalysis of succinate oxidation. Malonic acid, though structurally allied to succinic acid, is demonstrably different.

Gluco-ascorbic Acid—Gluco-ascorbic acid is similarly related to, but essentially different from ascorbic acid which mice, unlike human beings, are able to synthesize. If fed to these animals they soon become scorbutic.

Schardinger Enzyme and Xanthine Oxidase of Milk—These are still demonstrably identical (as is the periodontium of the different teeth) though showing widely different ranges of specificity. The former is able to catalyze the oxidation of different aldehydes to the corresponding acids. The latter, as far as is

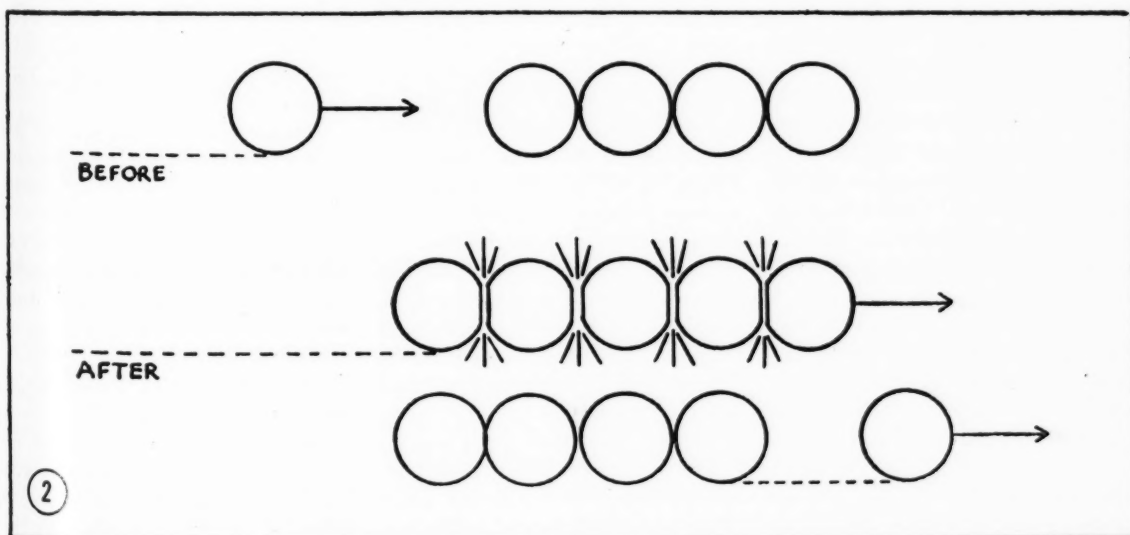


known, can only catalyze the oxidation of the purines hypoxanthine and xanthine to uric acid.

First Permanent Molar—The first permanent molar falls into another category. Its time of initiation is about one month earlier than that of the permanent incisors; that is, in the fourth month of foetal life. It is, therefore, allied to a more primitive developmental phase than that of either the second permanent or

third molar, or the permanent incisors; and, as its representative link is somewhat remote from the final development, its growing influence on the gingivae is opposed by the joint action of those relatively numerous link members more recently acquired.

Third Molar — The third molar is a tooth most frequently absent or out of place. This, in itself, corroborates that it is associated with, at



least a "near terminal link." A mutation can occur, however, without seriously disturbing the plan. Such a mutation may be genotypical, or it may be a phenocopy due to upsets in the growing person's environment. Interference in the plan at an earlier level, however, if not lethal, may result in rampant derangement of an entire dentition. Indeed, abnormal people usually have abnormal teeth.

Bicuspid Present no Problem—On the basis discussed, the bicuspid present no problem.

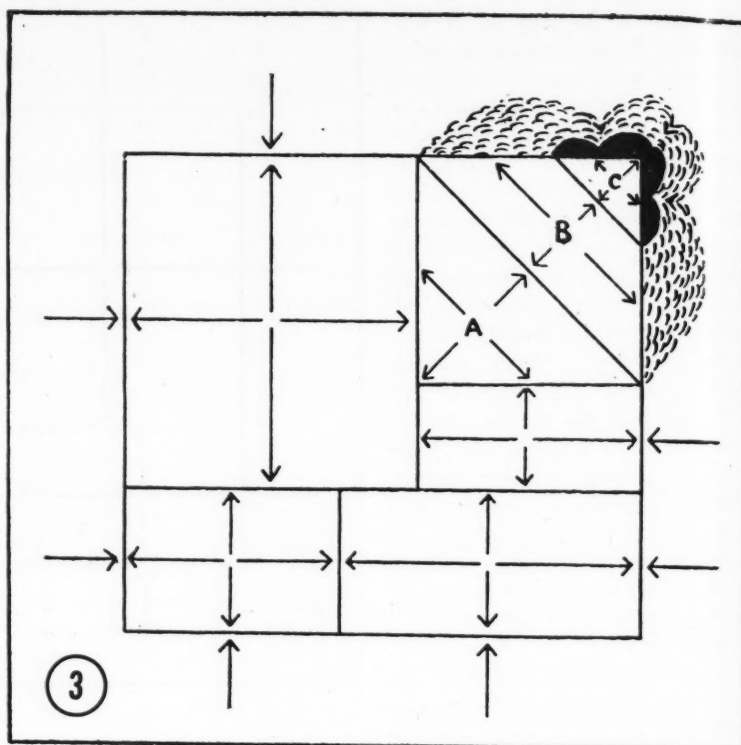
Endocrines

It is generally held that endocrine factors are responsible for the hypertrophy of extremities of the body during pregnancy. It is clear, however, that the action of the growth-promoting factor is *direct* during this period. The factor is liberated in the organs themselves. The action of the endocrine factors is *indirect*. They are transmitted to tissues which are increasing in sensitivity to growth (reactivity) induced by the embryo.

Direct Action by Implication—It takes only a few millionths of a second for the explosion of one gram of glyceryl trinitrate to be over. The molecular transformation, in response to a spark, is rapid, because the oxygen, carbon and hydrogen atoms necessary for the transformation are already present in the glyceryl trinitrate. An explosion results. By implication this is a *direct* reaction.

Indirect Action—It takes as long as one-tenth of a second to burn, in response to an identical spark, the same amount of trimethylpentane. This is because the oxygen atoms which unite with the carbon and hydrogen atoms in trimethylpentane have to come from the air. There is a lapse of time. This is an *indirect* reaction.

Active Growth of Promoting Factors—In other words, the tissues of a prospective mother first start to "explode," as it were, because of the active growth-promoting factor within their structure. Then "burning" sets in through her endocrines. Both processes are, of course, continuous



in her system; but the "explosion" is always one step ahead of the "burning" which, in her, is ineffective unless a state of "explosion" exists.

Endocrines Subject to Sensitivity of Growth—The embryo in utero activates maternal tissues. The endocrines are, together with the other organs, subject to sensitivity of growth. This makes their power all the more intense.

Figure Three—An amended diagram (Fig. 3) includes a sizeable section "A" for the first permanent molars prefixed within the second permanent molar; and the third molar culminates in that area. The intervening strip, "B," showing the permanent incisors, is slightly smaller than the part given to the first molars. The lightly shaded extension represents the advanced growth induced by the permanent incisors. It envelopes the extension confined to the darkly shaded zone for the second and third molars.

Natural Resolution of Tissues—After delivery all tissues should resolve and again fall within the sphere of the plan. The gingivae, unless pre-

vented by some affliction, actually do so by healing spontaneously.

Summary

Organs, during development from our beginnings, arise in phases one after the other under the control of a set morphogenetic plan.

Developmental Phases—Organs existing in a phase of development provide a morphogenetic or growth-promoting stimulus for organs in the next phase in the order of succession until the body is complete. These phases intercommunicate.

Precursor Phases—Organs in precursor phases undergo transition and lose their growth-promoting ability. But this ability can be restored.

Tissues Activated by Embryo—An embryo has the power to activate all the tissues of a gravid woman. Once activated, they are influenced by the endocrine glands.

Rates of Reaction Vary—Organs which are interrelated vary in their rates of reaction. Therefore those organ tissues which are associated with her "last link" phase in the epigenetic chain of development must be the

first to escape the plan. Her gums, related to teeth which are in turn connected with such a phase, respond with visible growth.

Conclusion

A possible solution to the problem of gingivitis gravidarum in the sciences of bio-physico-chemistry, genetics, and morphology is offered. The subject was approached from different angles based on these various sciences and the conclusions drawn from them separately all gave the same result.

New Rectal Form of Anesthetic, Surital Sodium

A NEW form of anesthetic, Surital Sodium, for rectal instillation in children and adults has been announced. Parke-Davis first introduced Surital Sodium as an intravenous anesthetic.

Advantages

The company stated the new product has seven advantages of rectal instillation:

1. May be given in patient's hospital room.
2. Avoids patient's apprehension of operating room.
3. Patients, particularly children, may go to sleep and awaken later in their room with no unpleasant memories.
4. Improves induction with inhalant anesthetics.
5. Minimizes laryngospasm and bronchospasm.
6. Adaptable to many painful examinations or short operative procedures.
7. Decreases postanesthetic nausea and vomiting frequently found with

Clinical Similarities—This discussion also suggests that what applies to this gingival abnormality may apply to serious derangements such as tumors. Indeed, pregnancy gum growths are clinically similar to myeloid epulis and closely allied to fibrohemangiomatic epulis.

Implantation of Embryonic Tissue May Produce Cancer—Investigators claim that cancer can actually be produced by implanting embryonic tissue into the tissue of adult animals. That being so, may not the opposite also apply? Would not an

appropriate extract of healthy adult tissues prevent the unmasking or de-inhibition, here discussed, of the chemicals of cellular elements?

Deinhibition Affected—Even though some constitutional disturbances, such as deviations in steroid metabolism, may markedly affect de-inhibition in particular tissues, cells may be unable to break the bounds of a subject's individuation field, which, too was considered here.

Adapted from *Journal of the Dental Association of South Africa* 9:298 (Sept. 15) 1954.

inhalant anesthetics used alone.

Preparation of Solution

Surital Sodium for rectal instillation is supplied as a non-sterile product to which a green dye has been added to distinguish it from the intravenous form. Solutions may be prepared with physiologic sodium chloride solution or distilled water, particularly in areas where tap water makes a cloudy solution.

Dosage

Surital usually is recommended for rectal instillation in solution of 5 or 10 per cent, but the dosage should be individualized for the patient.

Younger children, active or anxious adults, or patients with hyperthyroidism may need larger than the usual dose.

Method of Application And Effects

Use of rectal Surital does not require a cleansing enema. Patient care

in the operating room or during recovery can be decreased, however, if evacuation is completed before anesthesia.

Anesthesia Rapid—After rectal instillation, anesthesia occurs usually in five to 15 minutes causing sleep that is quiet and normal. Rate of recovery from Surital depends on the individual patient and the amount of anesthesia given, but most patients awaken within five minutes after the last injection.

Minimum Side Effects—Medical reports reveal minimum untoward effects after rectal instillation of Surital. One group of investigators reported a low incidence of laryngospasm when they used 5 per cent solutions of Surital rectally in 200 children. These patients ranged in age from six months to 11 years, and repetition of the procedure was readily tolerated by patients owing to pleasant induction and amnesia.

Adapted from Announcement by Bureau of Industrial Service, Inc.

We Can't Pay You, But—

NO DENTAL AUTHOR can ever be paid for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often spends money for drawings, photographs, models,

or graphs. We should like to help defray some of these expenses.

Until further notice, DENTAL DIGEST will allow \$25.00 toward the cost of the illustrations provided by the author of every article accepted.

If you have a constructive idea, an

innovation, a new result of tried and proved experiment, put it down in writing, illustrate it, and send the material to: DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

We can make suitable black-and-white cuts from Kodachrome transparencies.

We hope that you will accept this invitation!

Approach to MOUTH RECONSTRUCTION—

Part Three

MURRAY N. RUBINSTEIN, D.D.S., New York

DIGEST

In this installment of his serial article the author discusses treatment planning. The preparatory measures necessary are described and step-by-step details are presented for the use of the bite plane in mouth reconstruction. Four case histories are included with ample illustrations of the factors involved.

Steps in Treatment Planning

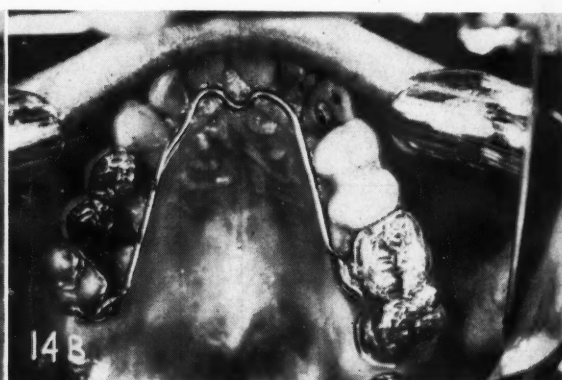
With the complete results of diagnostic procedures recorded, the practical aspects of treatment planning may be considered:

1. Preliminary considerations should be the elimination of irreclaimable teeth, retained roots, and correction of unsatisfactory ridges.
2. Periodontal treatment should be instituted to restore the tissues to an optimum level.
3. Occlusal disharmony resulting from obvious prematurities and extrusions should be corrected by equilibration. The purpose of equilibration is to distribute the masticatory load over as many teeth as possible. Notation for correction of infraoccluded teeth should be made. All defective restorations should be removed.
4. The need for orthodontic correc-

tion of malposed teeth should be determined prior to restorative procedures.

Repositioning of Value—In many instances where teeth are markedly malposed or drifted from their position, it is decidedly advantageous to plan their repositioning to be as nearly normal as possible. This will be of value in esthetics and will also place the load in an axial direction for better distribution of stress where such teeth are to be employed as abutments.

Case Illustrated—A typical example is presented in a case currently under treatment (Fig. 14A). The upper left quadrant, including the area from lateral to molar, was in linguoversion. The patient was referred to an orthodontist (Fig. 14B). These teeth have



14A. Upper left posteriors in linguoversion.

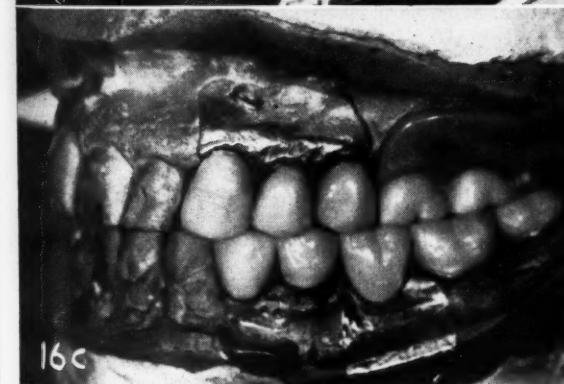
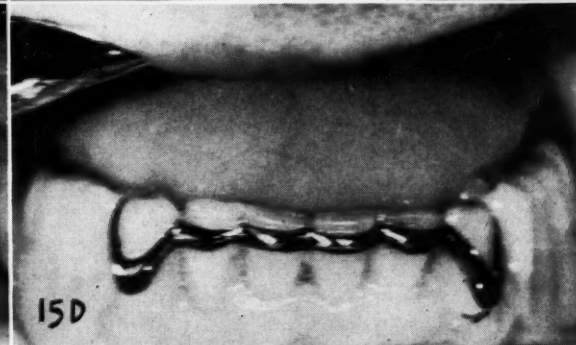
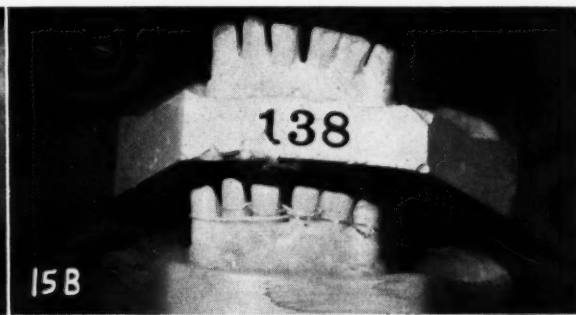
14B. Palatal appliance in place.

14C. Posterior teeth moved to more favorable positions.

already been repositioned considerably (Fig. 14C), and in the next month or two will be moved to an ideal arrangement permitting a favorable conclusion.

Procedure Uncomplicated—In less involved circumstances where teeth have drifted (Fig. 15A), it is a simple procedure to return these teeth to their normal positions which will result in improvement in treatment.

Method of Repositioning — The



15A. Teeth widely drifted from normal position.

15B. Wire ligature in place about normally positioned teeth. Grassline is about tooth to be moved.

15C. Teeth repositioned.

15D. Continuous clasp denture to maintain relationships.

(Three years since start of treatment.)

16A. Bicuspid teeth that have drifted.

16B. Bicuspid teeth returned to contact by use of grassline.

16C. Case completed with acrylic veneer crown splint.

17. Hawley splint. Palatal view showing shelf.

drifted teeth may be repositioned to their proper place by judicious use of grassline and wire:

(1) Using .010 wire, a few teeth in

normal position are splinted together to act as the stabilizing force (Fig. 15B).

(2) At the proximal surface, ap-

proximating the space, a piece of grassline is incorporated in the splint and tied firmly about the drifted tooth.

(3) When the grassline shrinks due to the moisture in the saliva, the displaced tooth will be brought back to its correct position (Fig. 15C). At this point more acceptable wire splinting will retain the tooth until treatment of a permanent nature can proceed. Two cases of this type are shown.

Additional Methods—(1) In the above instance a permanent removable splint was incorporated in a cast clasp used as a retainer (Fig. 15D) for a partial denture.

(2) The other case was completed by a permanent acrylic veneer crown splint (Figs. 16A, 16B, and 16C).

(3) Another method for simple correction of drifted teeth is by means of a Hawley retainer employing the labial wire (Figs. 17A, and 19G).

Restoration of Lost Vertical Dimension

Any lost height, determined from registration of the freeway space as recorded in diagnosis, should be restored.

(1) Vertical height is equal to rest position minus $2\frac{1}{2}$ to 3 millimeters.

(2) Additional considerations in determining vertical dimension are the patient's appearance and comfort.

(3) The muscles around the mouth should not appear strained or drawn.

(4) With the mandible at rest position the lips should have a natural curve.

Establishment of Centric Occlusion

A centric occlusion that will coincide with centric relation should be rebuilt after correct vertical height has been determined. Establishment of a centric occlusion at centric relation should be the aim.

Wide Range of Tolerance—Fortunately, there is a fairly wide range of tolerance in the temporomandibular joint and most patients can accommodate to reasonable differentials between centric occlusion and centric relation.

Harmonious Cuspal Relationship Desired—The temporomandibular joint is free moving limited only by the yield in the capsular ligament and

muscular balance, and influenced in its range of movement by cuspal guidance. If cuspal guidance influences condylar movements so that they remain within range of the tolerance of the limiting tissue; namely, capsular ligament and muscle action, no symptoms of discomfort are experienced.

Deviation Causes Discomfort—Any deviation from harmonious cuspal relationship, even limited to a single interfering cuspal incline, may cause definite symptoms of discomfort such as (a) joint disturbance, (b) destruction of the alveolar process, (c) loosening of teeth, (d) tooth abrasion, and (e) a combination of these symptoms.

Effects of Strain Beyond Tolerance Range—Frequently gross disturbances in occlusal relations may be borne with tolerance because, as mentioned, they are within normal condylar accommodations and the patient is therefore not subject to discomfort or pain. To summarize this point: if the deviation from the normal occlusal contact requires unorthodox condylar excursions, straining tissues beyond the range of tolerance, pain and discomfort of varying degrees may likely result.²⁰

Aim in Full Reconstruction—It is obvious that an optimum result should be the aim, and restoration of centric occlusion at centric relation should be attempted, especially if full reconstruction is involved.

Centric Relation

Centric relation is defined as the most retruded unstrained position of the condyles in the glenoid fossae at a determined bite height from which lateral and protrusive movements can readily be made. An accurate centric relation is extremely important because it is the starting point without which all the rest of the corrective procedures are doomed to failure.²¹

Reason for Importance—Centric relation is important because it is the contact position between the teeth that is established by bringing the jaws

together. Often, due to a prematurity, caused by a variety of reasons such as (1) improperly constructed restorations (a restoration, crown, or bridge), (2) uneven wear and abrasion of occlusal surfaces, or (3) tooth elongation and drifting, an acquired eccentric occlusal relationship will develop. McLean²² refers to this as a convenience relationship. This is the relationship in which the teeth occlude although one or both of the condyles may be out of their normal position.

Abnormal Cases Frequently Encountered—In a normal bite, centric occlusion and centric relation will coincide. However, too many of the cases encountered are not normal. In these cases, due to a malocclusal factor, an abnormal neuromuscular habit results from the patient trying to avoid the prematurity. This causes a strain which displaces the condyles in the fossae and prevents registration by the patient of an accurate centric relation.

Use of Bite Plate—To counter this difficulty, considerable help can be secured by the use of a bite plate modeled after the Hawley retainer. In this type of appliance a flat shelf is employed behind the maxillary anteriors which disoccludes the posteriors, thereby permitting free movement of the mandible.

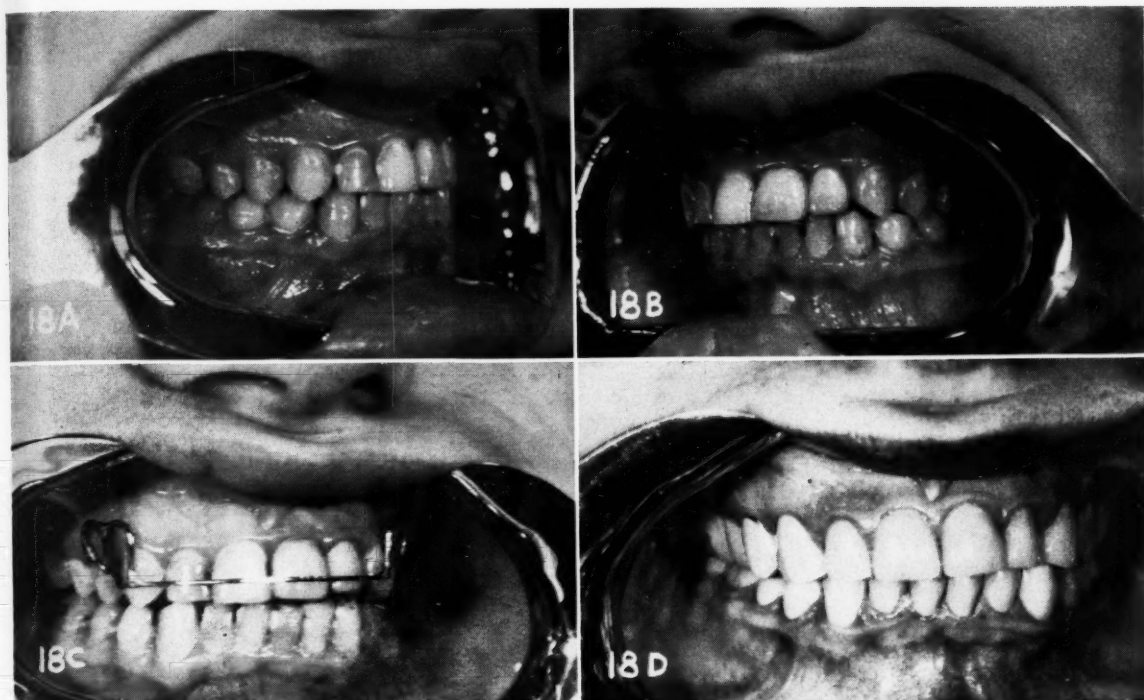
Relief Obtained—Once the occlusal interference is removed, dramatic relief is demonstrated even in painful instances and usually the mandible will assume its normal position. The patient is instructed to wear the appliance 24 hours a day except for cleansing purposes. After a few days to a week of use it is not uncommon to find that the patient will register in true centric without difficulty. Once freed from the false guidances caused by the prematurity, the musculature now returns to normal and brings the mandible to its true position.

Results from Use of Hawley Appliance—It was noted in some cases of temporomandibular complaints where no teeth were missing, that use of the Hawley appliance made possi-

²⁰Seides, Harry W.: Simplified Technique for Complete Rehabilitation, N. Y. J. Dent. 15:10 (Jan.) 1945.

²¹Shohet, H.: Fundamental in Mouth Reconstruction, DENTAL DIGEST 59:260 (June) 1953.

²²McLean, D. W.: Pathologic Occlusion: A Major Clinical Problem, JADA 31:239 (Dec.) 1944.



18A. Case One. Right side. This patient had temporomandibular involvement.

18B. Case One. Left side of patient shown in Figure 18A.

18C. Case One. Bite plate in position. Temporomandibular discomfort was relieved within 24 hours.

18D. Case One. Completed case. This is the same case shown in Figure 7.

ble relief of painful symptoms due to occlusal disharmony.

Permanence Added to Relief—Reduction of the prematurity disclosed by the use of the appliance gave permanence to the relief. These prematurities are virtually impossible to detect in the mouth without the use of the appliance because of the habit position assumed by the mandible over a long period of time.

Benefits from Use of Bite Plane

In practice it was demonstrated that many cases were greatly benefited by the use of the bite plane.

Case One—The patient, aged 18½, (Figs. 18A, and 18B) developed a unilateral chewing habit, attempting to avoid chewing on sensitive teeth which caused lateral displacement of the mandible to the right side, resulting in cranial pain. Almost overnight introduction of the bite plane (Fig. 18C) brought relief. Permanent reconstruction at a level established with the help of the bite plane result-

ed in a successful conclusion (Fig. 18D).

Case Two—(1) The patient, aged 56, (Fig. 19A) presented with a marked difference between centric occlusion (Fig. 19B) and centric relation (Fig. 19C).

(2) Right lateral and protrusive movements (Fig. 19D) forced the upper right central and lateral labially, resulting in the diastemas visible in the illustration.

(3) With the help of the bite plane (Fig. 19C) the occlusion was gradually ground in to acceptable balance (Fig. 19F).

(4) Manipulation of the labial wire of the bite plan accomplished gradual return of the lateral and central to normal positions (Fig. 19G) where they are retained by use of an internal wire and acrylic splint until ready to proceed with the construction of a permanent type of splint (Fig. 19H).

Case Three—Another type of trial treatment that can be favorably utilized in repositioning of the mandible

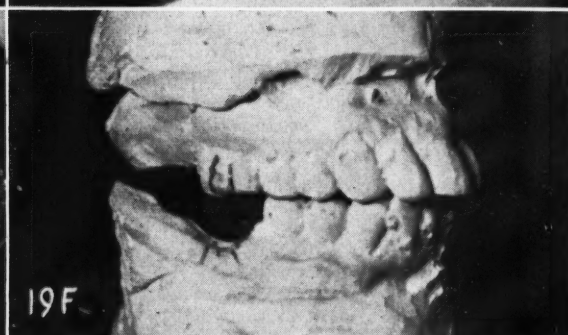
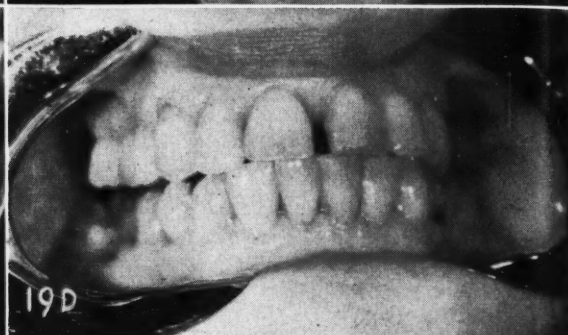
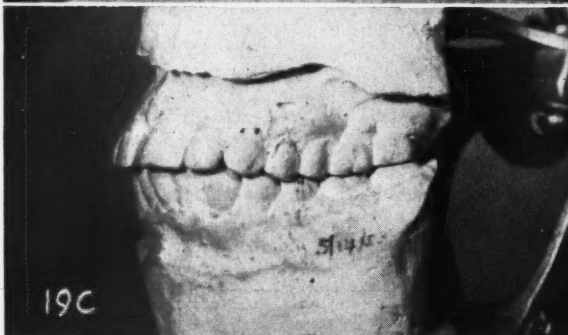
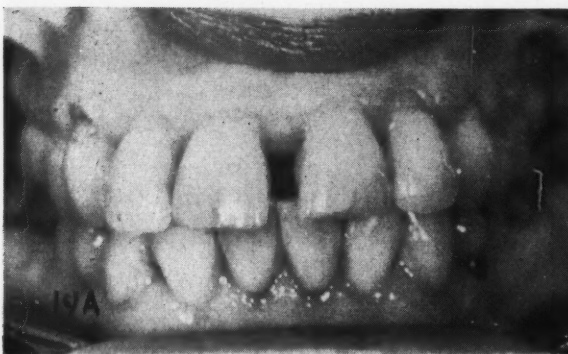
in cases of marked attrition, coupled with loss of teeth, is a modification of the acrylic splints. In this case, with severe wear of the teeth, several teeth were missing, both upper and lower (Figs. 20A and 20B). This case is particularly interesting because of the dental history:

1. In the last seventeen years the patient had eight sets of unsuccessful partial dentures made by as many dentists.

2. The patient complained of extreme discomfort with pain radiating from the head to the shoulders, particularly on the left side.

3. An interesting feature in this case is that for the past ten years the patient, an intelligent and thoughtful person, had determined for himself that the difficulty arose from the fact that he was forced to bring his mandible to the extreme right to secure occlusal contact.

4. The patient had requested dentists to remake the dentures with the mandible correctly repositioned. Either former dentists failed to under-



19A. This is the patient in Case Two. Right central, lateral, and cuspid are forced labially and distally due to error in occlusal plane in posterior construction.

19B. Case Two. Occlusion at centric relation shows space between upper and lower teeth. (Right side.)

19C. Case Two. Left side in contact.

19D. Case Two. Right lateral and protrusive movements forced the right anteriors to the position shown.

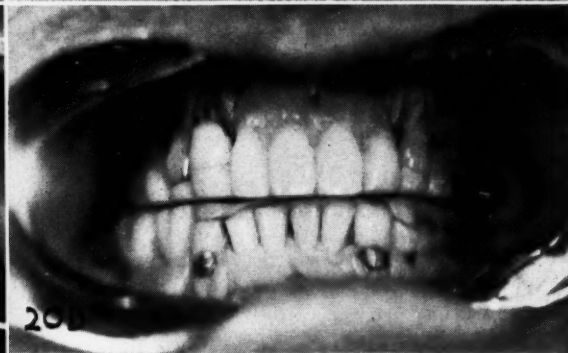
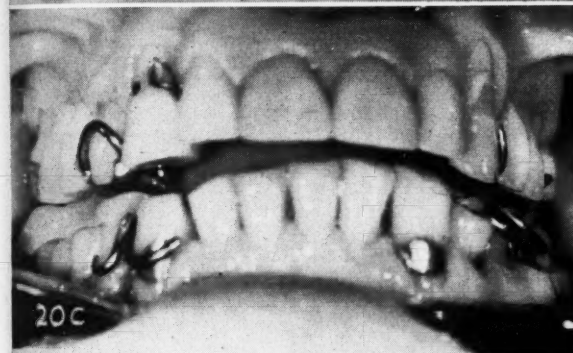
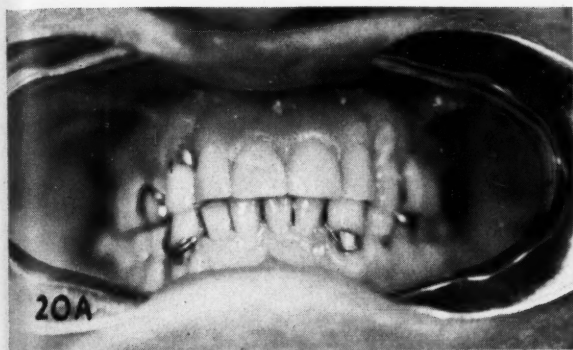
19E. Case Two. Bite plane in position, preventing poster-

iors from contacting and inducing thrust.

19F. Case Two. Occlusal difference adjusted. (The molar was removed because of a pathologic condition.)

19G. Case Two. The bite plane was gradually reduced. The denture was ground for accommodation of mandibular movements. Labial wire was manipulated to secure return of the anteriors to normal position.

19H. Case Two. Teeth are fully returned to normal position.



20A. Case Three. Extreme displacement of mandible.

20B. Case Three. Dentures removed.

20C. Case Three. Supplemental splint worn by patient with slight relief of temporomandibular discomfort.

20D. Case Three. New splints with flat occlusal plane originally constructed to excess vertical opening. Relief from discomfort was almost immediate.

20E. Case Three. Dentures were reduced in height completely establishing relief from discomfort. Surfaces were recarved to simulate tooth anatomy.

stand the problem or chose to consider the patient as recalcitrant, so the last denture was similar to all the others.

Patient Request: The patient prevailed upon the last dentist he visited to make a supplemental removable acrylic splint on top of the completed lower denture so that he could reposition his mandible (Fig. 20C).

Splint Affords Comfort: The patient reported that the dentist agreed to add the supplemental splint; introduction of this extra splint brought with it the first measure of comfort that the patient had had in years.

Defect: The only fault with the splint was that it didn't place the man-

dible far enough to the left. It is obvious that severe lateral displacement of the mandible existed in this case.

Treatment in Case Three—The following steps were taken in this case:

1. Upper and lower acrylic removable splints carrying the missing teeth were made, preventing the natural teeth from making contact. The occlusal surfaces of the splints were flat (Fig. 20D), permitting free excursion of the mandible.

2. As a starting point, the occlusal height was secured at a greater opening than seemed necessary for an opening of approximately 12-millimeter increase in the vertical dimension.

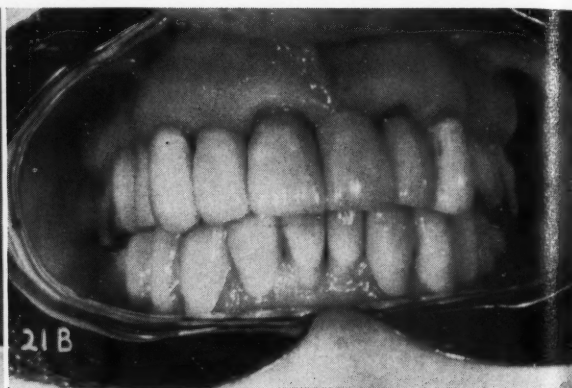
3. The patient wore the splints for 24 hours and returned for a check-up. Some relief from pain symptoms was reported. Occlusal movements were noted; there was some interference on the left side. This was eliminated and the patient returned two days later.

4. The patient stated that he now felt the entire occlusal height was too great. A wax record was taken with the splints in position and the cases remounted. Using emery paste, the occlusal platforms were ground to remove about 2 millimeters of height.

5. The patient was permitted to wear the splints for three days. On his return he commented that most of



21A. Case Four. Loss of molar vertical height due to loss of teeth. Anterior teeth in deep overbite.



21B. Case Four. Molar height restored. Anterior overbite reduced.

the discomfort he had had for many years in the shoulder and neck had disappeared. He still felt that there was too much height to the splints so they were reduced another 2 millimeters.

6. After another week the patient reported further relief. The occlusal platforms were moderately carved to simulate tooth surfaces and the patient was permitted to chew with the splints (Fig. 20E).

7. The patient's comfort is being maintained until permanent correction can be undertaken. Treatment plan will be to restore to the established plane, correcting the lower first.

Case Four—In many cases where there is an absence of posterior teeth (Fig. 21A) the condyles tend to rise upward and backward in the fossae resulting in (1) temporomandibular pain, (2) distal positioning of the mandible, (3) clicking of the joint, and (4) closure of the molar freeway space. In these cases the indication is to restore the lost molar dimension by use of a posterior splint until a return to the normal molar space is accomplished. This case was so treated, using the lower denture for this purpose:

1. The posterior acrylic teeth were set to increase the posterior dimension 2 millimeters (Fig. 21B). The patient wore this for two to three weeks and comfort was established.

2. Previous complaints of clicking of the joint and pain were eliminated.

Trial Cast Metal Splints

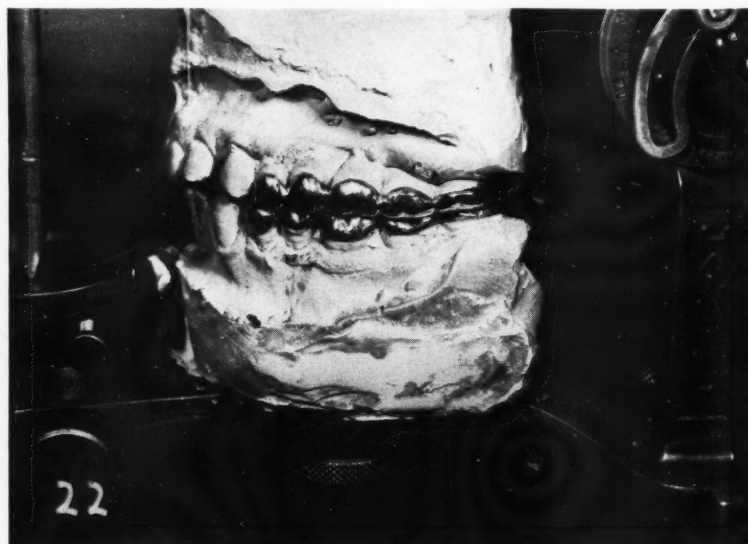
In cases of marked wear of all of the occlusal surfaces, excellent results may be obtained by use of trial cast metal splints (Fig. 22). When it has been determined approximately how much of the crown height has to be restored, metal splints may be cast and temporarily cemented to the teeth, supplying the lost vertical dimension.

Patient's Toleration Demonstrated—A period of about four weeks will demonstrate the patient's reaction sufficiently to permit permanent correction to the rebuilt level.

Method for Establishing Cuspal Inclination and Cusp Height—The Sei-

des²⁰ system is an excellent method of establishing the cuspal inclination and the cusp height and also provides for an acceptable anteroposterior compensating curve. For demonstration purposes a more involved type of case is selected. If the procedures are understood, less complicated cases should prove easier of solution. The case of the patient who presents with a generalized loss of tooth structure, some missing teeth with resultant shifting and extrusions, and an acquired occlusion of convenience is selected for demonstration of the method.

(End of Installment Three)
200 Central Park South.



22. Cast metal onlay splints used diagnostically to prove contemplated reconstructive level.

SIALOLITHIASIS:

As Seen by the Dentist

JOHN WILLIAM GIBBS, D.D.S., Benson, North Carolina

DIGEST

This article is presented as an aid to the diagnosis of obstruction of ducts of the salivary glands. No attempt is made to elaborate on the etiologies or the classical diagnosis. These are admirably and adequately treated in the literature.^{1,2,3} The case described herein is actually an aberration from the norm which is well to keep in mind when diagnosing and planning treatment for these conditions.

Report of a Case

A male, white officer was admitted to the hospital and referred to the dental service on October 3, 1953 with a diagnosis on his admission record of obstruction of the submaxillary duct, left side.

Examination

The patient was a well-developed, well-nourished, medium sized person with no apparent disorder except a 5-centimeter swelling just below the inferior border of the left mandible in the region of the first and second molar teeth. This swelling was indurated, immovable, and tender to palpation. The patient stated that pain was constant and severe and that deglutition was difficult.

Intraoral Examination—A normal, well-cared-for gingivae and dentition with all the third molars in position

was revealed by intraoral examination. The upper left first bicuspid and the lower left second molar were missing. The left submaxillary duct was swollen to about five times its normal size, was extremely tender, and was displacing the tongue to the right side interfering with speech. The saliva was thick and copious. The color of the duct and the floor of the mouth was not materially changed, and there was no evidence of suppuration. No distinct mass could be palpated in the duct. The oral temperature was 99.4 degrees.

Roentgenographic Examination—

A full mouth x-ray examination revealed only two Class II carious lesions. Lateral jaw films revealed nothing of significance. Occlusal films with three second exposures revealed a small radiopaque mass in the duct opposite the lower left first molar tooth. The size of this mass was about 1/2 millimeter in diameter.

Laboratory Examination—Routine laboratory procedures revealed a urine negative for sugar and albumin with a specific gravity of 1.012. The white blood count was 10,000 with 66 per cent neutrophils, 28 per cent lymphocytes, 4 per cent monocytes, and 2 per cent stabs. The hemoglobin was 15 and the hematocrit was 46.

Immediate Past History

The patient had noticed swelling in the region off and on for the past three or four weeks. He had noticed it after eating and on exposure to cold. The area would become swollen and gradually subside. Five days previously the area had become swollen

and did not subside. Thinking that he had an infected tooth, the patient sought relief at his local dispensary. The dental surgeon, having ruled out infection in the teeth, probed the duct for obstruction. No obstruction could be ascertained with the probe. It was believed that the entire length of the duct had been probed. The swelling and the pain increased in the next two days, and the patient was sent to the hospital for an eye, nose, and throat examination. He was placed on 500 milligrams of aureomycin four times a day, and a soft diet. He presented at the dental clinic the following morning.

Treatment

(1) Because of the history of apparent patency of the duct (personal communication with the surgeon who performed the probing), (2) the small size of the calculus as shown in the occlusal films, and (3) the assurance from the literature^{1,2} that masses many times the size of this one could be spontaneously evacuated, a meatomy was not thought to be necessary.

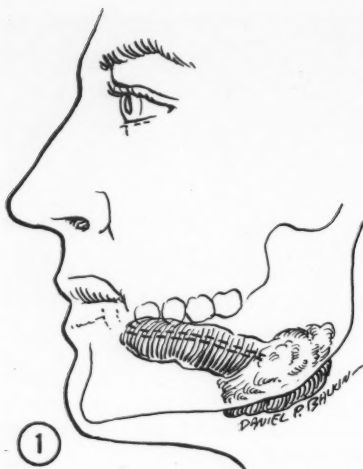
Duct Believed Occluded—It was believed that the patient had, and had had for some time, a small occluding calculus which was able, together with a thick saliva, partly to occlude the duct. It was felt that the probing had irritated the duct, or that some infection had been introduced, and that the present full occlusion was due to an adenitis or ductitis and not to a mere mechanical obstruction.

Heat Applied—Heat was therefore prescribed intraorally and externally. It was hoped that the previously prescribed antibiotic, with its broad spectrum, would eliminate any infec-

¹Thoma, Kurt H.: Oral Surgery, St. Louis, C. V. Mosby Company, 1948, Vol. 2.

²Miller, Samuel Charles: Oral Diagnosis and Treatment Planning, ed. 2, Philadelphia, The Blakiston Company, 1936.

³Winter, Leo: Operative Oral Surgery, ed. 3, St. Louis, C. V. Mosby Company, 1947.



1. Shows the left submaxillary duct swollen to five times (5X) the normal size.

tion, and that the calculus would spontaneously evacuate itself.

Sedative Given for Pain—Codeine, grain $\frac{1}{2}$ with aspirin compound, 5 grains was prescribed every four hours, if necessary, for pain.

Palliative Procedure—The following morning, October 4, the patient was seen on emergency service. The pain was more severe despite the medication, and the swelling had increased. Attempted aspiration of the duct distal to the calculus with a 22-gauge needle was unsuccessful. This procedure was attempted solely as a palliative measure. Meatomy was again considered, but inasmuch as the condition was believed to be an infective process and not a mechanical obstruction, this idea was again abandoned.

Penicillin Administered — It was thought that perhaps an organism was present that was not susceptible to aureomycin and that penicillin therapy should be instituted also. Medical consultation concurred, and penicillin (Aquacillin®), 300,000 units, intramuscularly, was prescribed twice daily. Adrenalin, 1:1000 was applied topically in an effort to reduce the edema.

Ice Substituted for External Heat—Because of the severe pain, an ice collar was substituted for the external heat.

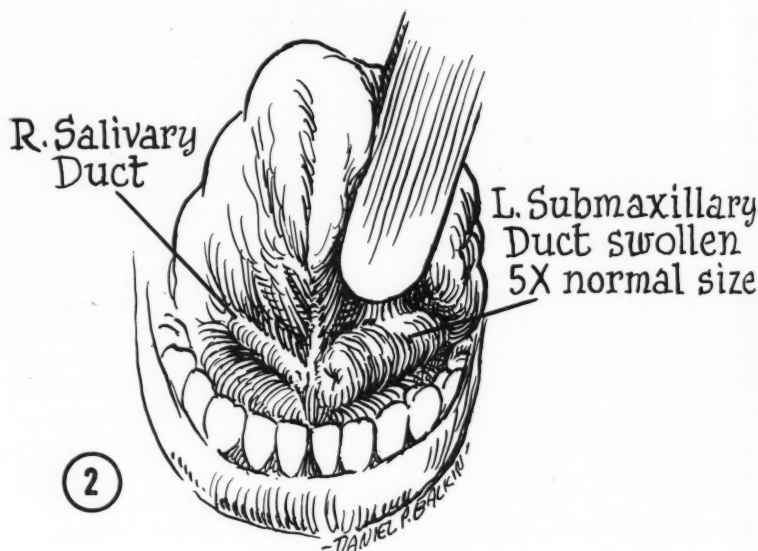
Massage Increases Pain—On Octo-

ber 5 the patient was feeling better but the swelling had not decreased in size. He was seen in the throat section and massage of the gland was prescribed. This produced a severe exacerbation of pain lasting about one-half hour, but also elicited a small amount of yellowish white drainage from the duct. Apparently a fistula was forming in the duct in the region of the small calculus.

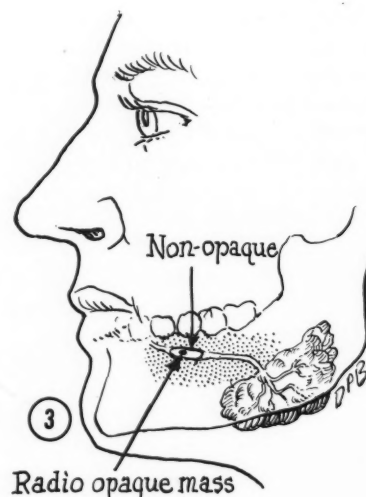
Swallowing was not as uncomfortable as it had been.

Condition Unchanged—October 6 the patient's condition remained essentially unchanged. Occlusal films showed the small calculus to be in the same position. Treatment was continued. Pain was constant.

Two Masses Discharged—October 7 the patient's condition was the same. Medical consultation resulted



2. View of the tissues in the floor of the mouth showing swollen left submaxillary duct.



3. Shows the size of the masses in the salivary duct: the smaller opaque mass was shown in the X-Ray; the larger radiolucent mass did not show in the x-ray film.

in increasing the penicillin to 600,000 units every six hours. Since the patient was still on aureomycin, multiple vitamin therapy was begun. A culture was taken for predominating organism and sensitivity from the exudate which continued to drain. About 9:00 p.m. notification was received from the hospital that the patient had discharged two large "stones" and was experiencing great relief.

Description of Masses—October 8 the patient's pain was almost entirely gone and the swelling greatly diminished. The masses that he had passed were three in number: the largest measured 5 millimeters in diameter and was a tapering cylinder about one centimeter long; the second mass was slightly smaller and of the same shape; the third appeared to be the tip of the second mass. The

masses felt like limestone and made a hard "click" when dropped on a hard surface.

Not Revealed in X-ray Views— Surprise was expressed that these masses did not show at all on the films. An x-ray exposure was made of them at one, two, three and four seconds.

Therapy Discontinued—October 9 the patient's pain was completely gone and the swelling was barely discernible. He had passed no more masses, but copious amounts of saliva and thick yellowish white exudate were still draining. The antibiotics were discontinued as it was felt that a high blood level would persist for a few days.

Patient Dismissed—October 12, no drainage could be elicited from the

duct even under pressure and massage of the gland. The laboratory report on the culture was no growth in twenty-four hours, probably due to the antibiotics. The patient was discharged asymptomatic.

Discussion

There is little doubt as to the course to be taken when dealing with a mechanical obstruction of a salivary duct which is demonstrable: surgical removal of the obstruction brings rapid and dramatic relief. In the presence of acute infections, however, it is wise to avoid surgical procedures. It is sometimes difficult to determine exactly which pathologic factor is present to be dealt with.

Diagnostic Limitations—The limited value of the diagnostic probing

and the x-ray film is illustrated. Certainly, these methods should not be regarded as positively excluding diagnostic methods in cases of mechanical obstruction. The probe is able to pass the occluding mass on the duct wall or through the center of the mass if it is not sufficiently calcified. The x-rays also are able to pass too readily through a poorly calcified mass, resulting in no image on the film.

Low Exposure of Film Advised—It would seem good practice to use exposures as low as one or one-half second with the occlusal film in order to pick up outlines of poorly calcified masses that would be overexposed by ordinary routine exposure times, and as a result, be absent from the film.
Kelly Building.



Obesity and Diet

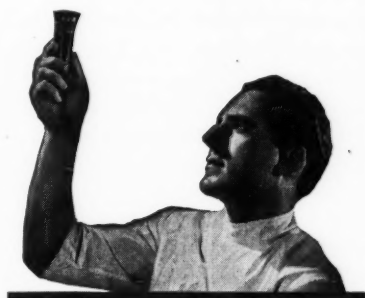
Pyruvic acid is the substance that inhibits oxidation of fat and promotes fat storage. Restriction of carbohydrate intake removes much of the source of this acid. With the energy needs more fully supplied from the body reserves a correspondingly smaller food intake is required.

When total caloric intake is restricted, a decline in basal caloric expenditure is to be expected. Obese persons who lose weight by low-caloric diets maintain constant weight with a food intake considerably lower than other persons of comparable size. Thus it appears that a subcaloric diet must be continued.

The resulting fall in basal metabolism may indicate (1) that the energy requirement of the tissues has declined, or (2) that less than an optimal amount of energy is being made available for the work of the tissues. The lowered metabolism of obese persons fed low-caloric diets can reasonably be assumed to indicate that body fat is not being mobilized fast enough for the metabolic needs of the tissues. A reducing diet should, therefore, aim primarily toward increased mobilization and utilization of fat.

MEDICINE

and the Biologic Sciences



A ketogenic diet consisting essentially of protein and fat appears capable of enabling the organism to utilize large quantities of fat. Mobilization of fatty acids from adipose tissues increases after ketonemia. Consequently, blood concentration of ketones and fatty acids is increased, causing oxidation in larger amounts. The ketogenic response to fat intake is greater in the obese than in the lean. Mobilization of utilizable fat

appears to limit the appetite and cause the disproportion between caloric expenditure and intake necessary for weight reduction.

A definite daily routine is necessary for the patient eating the calorically unrestricted diet. The patient should sleep exactly eight hours each night, take a thirty minute walk before breakfast, and drink six glasses of water before 5 p.m.

Each of the three meals is essentially the same: at least one-half pound of roast beef, steak, roast lamb, lamb chops, stewed beef, fresh pork, pork chops, or hamburger ground at home. One-fourth of the meat should be fat. Prepared meats that contain salt are forbidden. The patient may eat as much meat as desired.

The second course of each meal is limited and consists of an average portion of one of the following foods: white potatoes, sweet potatoes, boiled rice, grapefruit, grapes, melon, banana, pears, raspberries, or blueberries. Other foods are prohibited. The patient may have a cup of coffee or tea without sugar or saccharine with each meal. Juice of half a lemon in a glass of water is the only other beverage permitted.

*Pennington, A. W.: Treatment of
(Continued on page 128)*

Therapeutic Aid

in ORAL WOUNDS

**RICHARD M. HERD, D.D.S., J. RICHARD ROBINSON, D.D.S.,
KENNETH K. KLINE, D.D.S., CHARLES HUTTON, D.D.S.,
DUARD LAWRENCE, D.M.D., JOE DOUGHERTY, D.M.D.,
RALPH JONES, D.M.D., Louisville, Kentucky**

DIGEST

The possible value of chlorophyll and iodophenol mouthwash as an aid in the healing of acute and chronic oral wounds was studied by a group of investigators. The formula, by weight per cent, of the mouthwash used was boric acid 0.60, iscarin 0.48, phenol 0.53, iodine N.F. 0.60, chlorophyll 0.45 (Phylorinol®). The results of the investigation in which a wide variety of patients with a representative cross section of pathologic conditions encountered in practice was observed, are reported in this article.

Types of Cases Treated

Eight cubic centimeters of this mouthwash were used on selected clinical cases every hour during waking hours for 2 to 5 days by 205 patients with marginal gingivitis, 255 patients following extractions of impactions or multiple teeth, 78 patients with necrotizing ulcerative gingivitis, in 72 fractured jaw cases, in 24 osteoalveolitis cases, and in 11 patients with denture sores.

Additional Cases—The other cases in the series were 7 aphthous stomatitides, 3 cases each of chronic oral antral openings and gunshot wounds of the face and jaws, 2 cases of osteomyelitis, 2 glossitis cases, 2 electrical burns, and one case of cheek biting.

Persistent Conditions — The age range of the patients investigated was from 3 to 75 years and included 24 pregnant patients with hormonal en-

largement of the gingiva, 7 patients with subacute bacterial endocarditis, 3 tuberculous cases, and 14 patients who had been confined to bed from a minimum of 11 weeks to a maximum of a year and a half, all of whom had extractions.

Variety of Applications — The mouthwash was used in 2 cases in the poliomyelitis ward. It was used in ambulatory cases of chronic alcoholics, diabetic patients, senile and debilitated patients, representing a wide cross section of patients with reduced normal healing process.

Length of Healing Time Compared — One group of 30 patients who had from 1 to 9 extractions of teeth each was given the chlorophyll-iodophenol combination after surgery to be used every waking hour for 3 days. This same group also had extractions of 1 to 7 teeth at another time and were not given the therapeutic mouthwash. The results of the two methods of procedure were compared.

Results of Investigation

The results of this study are given in Table 1. From this table it can be seen that in 85.4 per cent of the cases where the mouthwash was used the patient's lesions healed in less time than was expected.

Discussion

The effects of chlorophyll and other agents were studied in 1,372 experimental wounds by Smith and Livingston.¹ Their experiments were per-

formed on clean wounds, infected wounds, and standardized third degree burns in rabbits, dogs, guinea pigs, and rats. In 67.9 per cent of the wounds, chlorophyll was found to reduce the healing time by 24.9 per cent. The investigators stated: "When the time required for healing is reduced by one-fourth in from two-thirds to three-quarters of a series of over four hundred lesions, it would seem to indicate that chlorophyll does cause some biologic response in respect to stimulating cell growth which can be put to a useful purpose in the many problems associated with wound healing."

Factors in Mechanical Action—The mode of action of chlorophyll-iodophenol combination is not clearly defined but it is possible that the action may be attributed to the following factors:

1. Stimulation of cellular metabolism
2. Increased resistance to invading bacteria
3. Oxygenating and enzyme activating properties

Useful in Treatment of Empyemic Loculations — Bowers² reported, "an outstanding feature in the use of chlorophyll has been the fact that in abscesses, empyema cavities, sinus tracts, surface lesions, and osteomyelitis cases, the purulent drainage has stopped within 48 to 72 hours. This also has been true in the eye, the nose, accessory nasal sinuses, lesions in and about the mouth and in purulent infections of the urinary bladder or kidney pelvis. This finding has been consistent if the chlorophyll can reach the site of origin of the pus, and only a slight discharge is seen after the first time." Because of this property, chlorophyll has been found valuable

¹Smith, L. W., and Livingston, A. S.: Chlorophyll: An Experimental Study, *Am. J. Surg.* 62:358 (Dec.) 1943.

²Bowers, W. F.: Chlorophyll in Wound Healing and Suppurative Disease, *Am. J. Surg.* 73:37 (Jan.) 1947.

Table 1.

Pathologic Condition	Number of Patients	Percent Improved Healed*	Percent no Improvement**	Side Effects
Gingivitis	205	94.1	05.9	1 case of nausea following use of mouthwash
Fractured Jaws	72	91.6	08.3	1 case of sensitivity to oral tissue. Patient complained of burning sensation
Osteoalveolitis	24	75.0	25.0	No toxicity noted
Vincent's Infection	78	89.7	10.2	2 cases of nausea following use of mouthwash
Extractions: Impactions Full mouth Immediate dentures	255	89.8	10.2	No toxicity noted
Denture sores	11	72.7	27.2	1 case of nausea following use of mouthwash
Osteomyelitis	2	Percentage of cases too small for comparison		No toxicity noted
Chronic oral antral opening	3	"	"	No toxicity noted
Glossitis	2	"	"	No toxicity noted
Gunshot wounds of face and jaws	3	"	"	No toxicity noted
Aphthous Stomatitis	7	"	"	1 case of momentary burning
Cheek biting	1	"	"	No toxicity noted
Electricity burns	2	"	"	1 case of burning sensation

*When the patient's lesions or wounds healed in less time than was expected and showed no local complications the case was classified as improved.

**When the patient's lesions or wounds healed normally, but not at a greater rate than expected, the case was classified as no improvement.

in the treatment of empyemic loculations.^{3,4}

Deodorizing Effect — One of the most outstanding contributions of this agent to clinical practice has been the remarkable efficiency of the chlorophyll-iodophenol combination

in deodorizing foul smelling oral lesions such as recent extractions, Vincent's infection, chronic alveolosteomyelitis, infected compound fractures of the jaws, deep sinus tracts, and interdental splints for fractures. This deodorizing effect and clean mouth feeling is not only of inestimable value to the patient, but also to the dentist.

Clinical Evidence on Nontoxicity

All the available evidence indicates that the reported mouthwash is essentially nontoxic. Of the 400 plus cases treated with iodophenol combination in Table 1, only 7 instances of minimal side effects are to be noted.

Absence of Systemic Reactions—In this investigation the authors noted no adverse systemic reactions and many of the patients have voluntarily commented that chlorophyll-iodophenol combination has been more comfortable and clean feeling than any other similar mouthwash.

Adverse Opinion—One author reported that in a series of 15 clinical cases he found no advantage in the use of the reported mouthwash; in his opinion the more rapid healing seen by the other investigators was due entirely to the mechanical action of the liquid.

Shorter Healing Time Noted—Although the patient's oral wound should heal satisfactorily by merely keeping the mouth clean, it was the authors' opinion that the chlorophyll-iodophenol combination gave a shorter healing time than when only the mechanical action of any liquid was used.

Results Compared — In a selected series of cases the investigators and the patients did not know the contents of the liquid mouthwash used. Some of the patients were given solutions which had no therapeutic agent in the solution after extractions and the other group was given the iodophenol combination; clinical observation indicated that in the latter group there was a shorter and more pleasant post-operative healing time, as shown in Table 1. The most common complaint from patients was the lingering taste of the mouthwash for several hours.

Clinical Use of Phylorinol®

In the treatment of gingivitis, Vincent's infection, and paradental pockets, it is suggested that the cause must first be removed. The therapeutic use of chlorophyll-iodophenol combination as a mouthwash every hour dur-

³Gruskin, B.: Chlorophyll—Its Therapeutic Place in Acute and Suppurative Disease, *Am. J. Surg.* 49:49 (July) 1940.

⁴Morgan, W. S.: Chlorophyll Therapy—A Review of 114 Cases, *Guthrie Clinical Bull.* 16:94 (Jan.) 1947.

ing waking hours will then aid in producing beneficial results:

Advantages Noted—It was observed that the mouthwash was instrumental in effecting the following results.

1. The growth of healthy granulation tissue was promoted
2. It helped produce a clean granulating wound base
3. Malodorous lesions were deodorized
4. The mouthwash was nontoxic, bland, and soothing

Procedure in Deep Infection — It should be noted that special care must be taken where there is deep infection due to a retained root or other foreign material because this mouthwash

tends to stimulate granulation tissue formation, closing off the deeper infected area. In such cases it has been necessary to enter the repaired tissue surgically to remove the foreign material and reapply mouthwash to the deeper structures.

Conclusion

There is often need for a supplement to natural healing stimuli in order to overcome unfavorable conditions in the mouth. The authors believe that the reported mouthwash gives promise of filling this need. Clinical studies have established beneficial results of this mouthwash in the management of mouth wounds.

Authors' Note: The authors are indebted to many general practitioners who supplied them with data which were evaluated but not included in this report.

The Phylorinol® used in the investigation reported was supplied by the Schaffer Laboratories of Glendale, California. A prescription should be written for the mouthwash and the directions should read, "Teaspoonful to be used as a mouthwash every hour for two to three days following surgery."

*Section in Oral Surgery
and Dentistry
Louisville General Hospital*

DIFFERENTIAL DIAGNOSIS			
ETIOLOGY	TRIGEMINAL NEURALGIA	MAXILLARY SINUSITIS	TEMPOROMANDIBULAR ARTHRITIS
	Idiopathic	Bacterial	1. Traumatic 2. Degenerative 3. Rheumatoid
Signs and Symptoms			
A. Pain			
1. Character	Sharp excruciating spasms, intermittent, with complete relief between attacks	Continuous throbbing ache intensified upon postural change	Continuous vague diffuse ache accompanied by sharp pains during mandibular movements
2. Distribution	Sharply delineated from trigger zone along one or more branches of the trigeminal nerve usually unilateral	Diffuse; mainly in the infraorbital region unilateral or bilateral	Preauricular region unilateral or bilateral
3. Reference Zones	None	Maxillary teeth especially bicuspids and molars, cheek and frontal region	Temporal region, ear, and angle at mandible
4. Effect of heat or cold	None	Heat may give some relief	Heat may give some relief
5. Effect of analgesic drugs	None	Some relief	Some relief
B. Tenderness	None	Infraorbital region	Present during acute phase
C. Temperature	Normal	Usually elevated	Normal
D. Trigger Zones	Present	None	None
	Severe muscle spasms during pain episodes	Nasal or postnasal discharge	Clicking or cracking during mandibular movement trismus

From Current Advances in Dentistry, University of Illinois College of Dentistry Telephone Extension Program for 1954-1955, page 46.

The EDITOR'S Page

ONE OF the disconcerting experiences in dental practice is that of a restoration becoming disengaged from the cavity preparation. One of the most universal expressions used to impugn the skill of a dentist is to say "his fillings come out."

Restorations usually fail because they have been poorly planned. Sufficient retention has not been provided or the stress patterns to which the restorations are subject have not been analyzed. There are sound mechanical and engineering principles that must be respected if restorations are to be successful and to be retained in position. G. V. Black brought order and classification to operative dentistry and his contributions have stood the test of almost half a century.

With the refinements in operative techniques, notably the development of instruments of non-rotary design for cavity preparation, the procedures in operative dentistry must be reevaluated. Perhaps the sharp cavity line and point angles in the Black classification are not as fundamental as we once thought them to be. The development of hydro-colloid impression techniques for individual cavity preparations and the use of more precise investing and casting methods have changed much of the routine of operative dentistry.

Progress is recorded when all methods are questioned and procedures are not accepted on tradition alone. The inquiring mind leads to investigation, investigation to research, the results of research to improvement in dental practice. From this chain of circumstances it is the public that profits.

An enterprising piece of research has been reported from the University of Nebraska.¹ The study was performed by two pedodontists and a mechanical engineer. It is the extension of a study that was done to determine the most desirable cavity form for deciduous molars. The present investigation was "designed to study the internal stresses which are formed in the restoration when different prin-

ciples of cavity preparation are employed."

It was found that:

1. "There was less concentration of stress and the use and better distribution of stress in those restorations placed in cavity preparations which allowed for a greater depth of restorative material (deep occlusal steps and round and sloping pulpal walls).

2. "Rounding and sloping the axial wall did not consistently reduce stress in the restoration. Because of the possibility of pulpal involvement this procedure is not recommended for Class II cavity preparations.

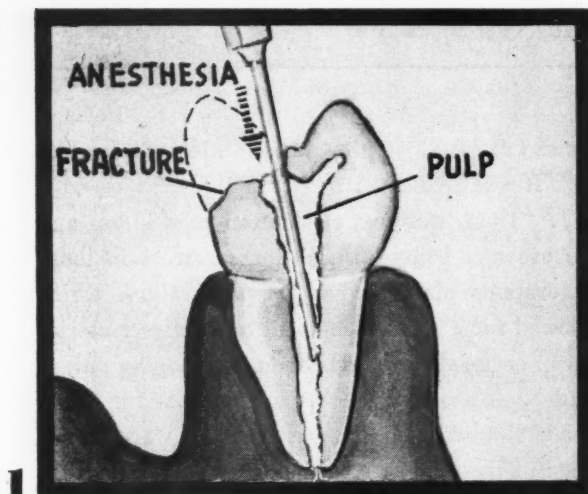
3. "The point of load application has a definite bearing on the stress patterns induced in the restoration. The further away from the pulpal, axial, and gingival cavity walls the load is applied, the less will be the stress around these cavity walls.

4. "Slight rounding of the pulpal-axial line angle has little effect in reducing stress in the restoration regardless of the point of load application. These results support previous findings that rounding the pulpal-axial line angle had little effect in increasing the resistance of the amalgam restoration to fracture.

5. "There was a marked reduction in stress when the pulpal wall was rounded and sloped. These findings also support the results of the investigation in which it was shown that when the pulpal wall of the Class II cavity was rounded and sloped, the resistance of the silver amalgam restoration to fracture was markedly increased. Therefore, rounding and sloping the pulpal wall of the Class II preparation are recommended as a most desirable procedure."

Some of the newer instruments for cavity preparation will permit this refinement in internal cavity form without increasing the pain reaction. The hazards of pulpal injury, however, should never be ignored in any form or method of cavity preparation. The conservation of tooth structure and the maintenance of pulp vitality are cardinal principles in dental surgery.

¹Haskins, Richard C.; Haack, Donald C.; and Ireland, Ralph L.: A Study of Stress Pattern Variations in Class II Cavity Restorations as a Result of Different Cavity Designs, *J. Dent. Research* 33:757 (Dec.) 1954.

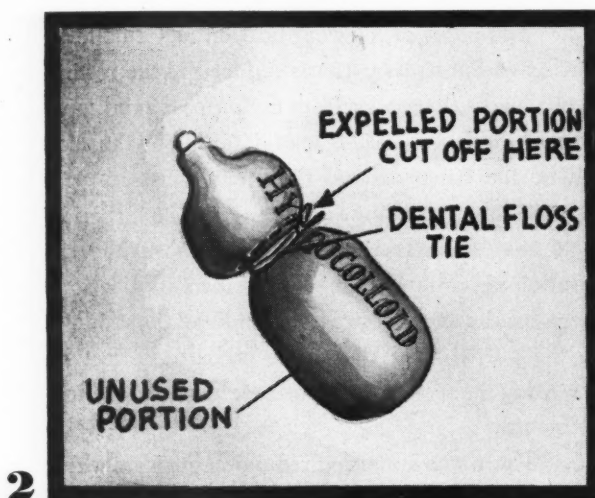


Clinical and Laboratory

Anesthesia for a Fractured Tooth

R. B. Johnson, D.D.S., Sanford, Maine

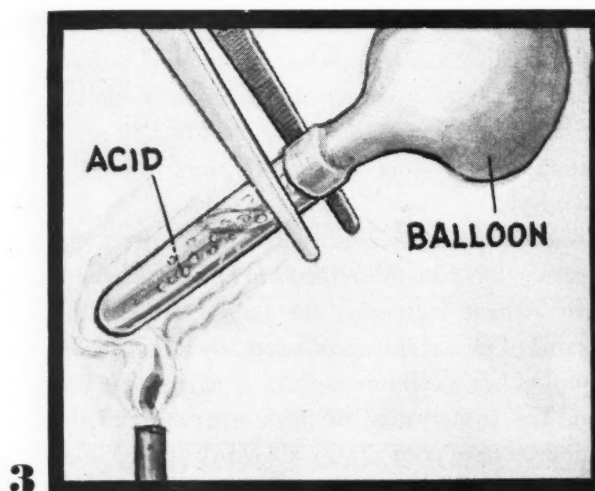
1. When the usual methods of producing anesthesia are not sufficient apply the anesthetic solution directly to the exposed pulp, using a saturated cotton pellet. After a few minutes inject slowly into the pulp, advancing the needle carefully toward the apex.



Use of Small Amounts of Hydrocolloid

William W. Howard, D.M.D., Portland, Oregon

2. Before opening a hydrocolloid tube, tie off the amount needed, snip the plastic tube, and remove the amount above the knot. Return the unused portion to the storage tank.



A Method to Collect Acid Fumes

William E. Hentze, D.D.S., Greenville, Illinois

3. When boiling acid place a balloon over the neck of the test tube. As the fumes are formed, the balloon is inflated and collects the fumes to prevent them from entering the laboratory.

READERS are Urged to Collect \$10.00

For every practical clinical or laboratory suggestion that is usable, DENTAL DIGEST will pay \$10.00 on publication.

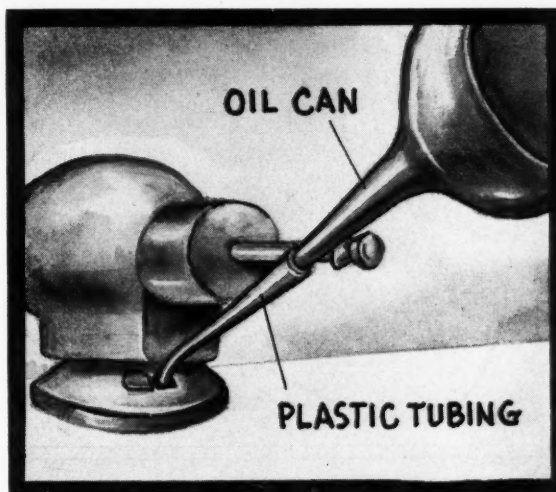
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

SUGGESTIONS . . .

An Easy Oiling Method

S. M. Dooreck, D.D.S., Brooklyn, New York

4. Attach a piece of plastic tubing to an oil can. This flexible extension allows oil to be placed in oil holes that are difficult to reach.

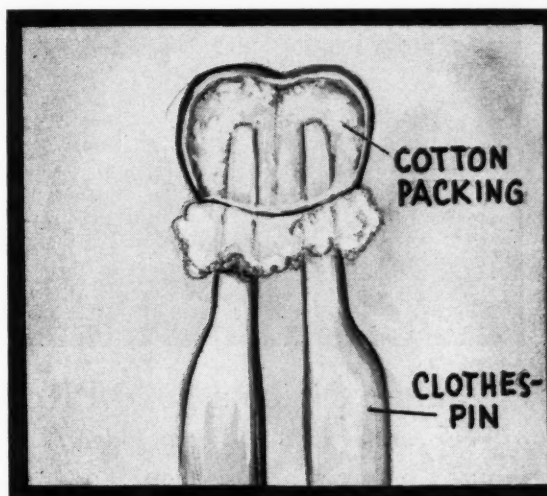


4

Holding a Crown for Polishing

Claude P. Carpenter, D.D.S., Milwaukee, Wisconsin

5. Wrap cotton around the tips of a trimmed clothespin that fits snugly in the crown. This makes a satisfactory holder for the crown while it is polished in the lathe.

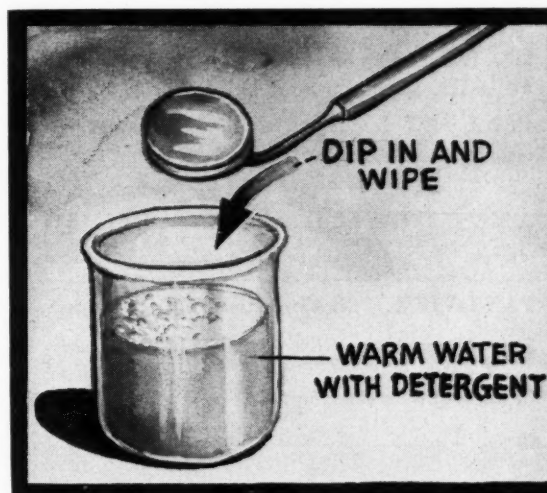


5

Keeping a Mouth Mirror Clear

L. B. Severance, Kasson, Minnesota

6. Place a small amount of detergent in a glass of warm water. Dip the mirror in the detergent before placing it in the mouth. The warm water heats the mirror to prevent fogging. The detergent keeps the mirror clean while using the air-water spray.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 134 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



FORGOT TO WEAR HIS FEATHERBITE

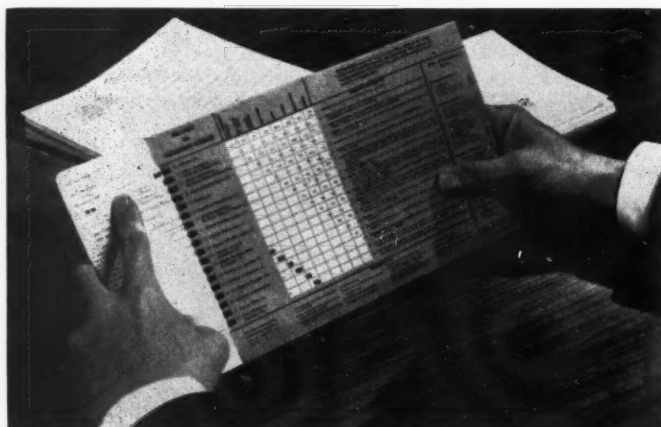
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(Continued from page 121)

Obesity with Calorically Unrestricted Diets, J. Clin. Nutrition 1:343-348 (September) 1953.



Heart Disease in Middle Life

The increase in the incidence of heart disease at mid-life is manifestly greater than in any previous decade. There are a number of direct and indirect reasons for the occurrence. Mid-life represents a period in which conditions occur that cause the development of heart disease in many persons.

There are two methods of approach to the problems of health in older people: (1) to wait until heart disease is present, then to treat as indicated by giving digitalis, nitroglycerin, diuretics, and oxygen tents, or (2) perhaps to see the patient pass into a state of disease for which nothing can be done. The first method is an attempt to understand some of the causes of heart disease reflected by chemico-pathologic changes which lead to diseases of the heart, and to do something about them.

Arteriosclerosis and hypertension are prime factors in contributing to heart disease. Arteriosclerosis is closely associated with disturbed nutrition of the body which may in part be corrected. Perhaps the disease may be within the realm of control soon.

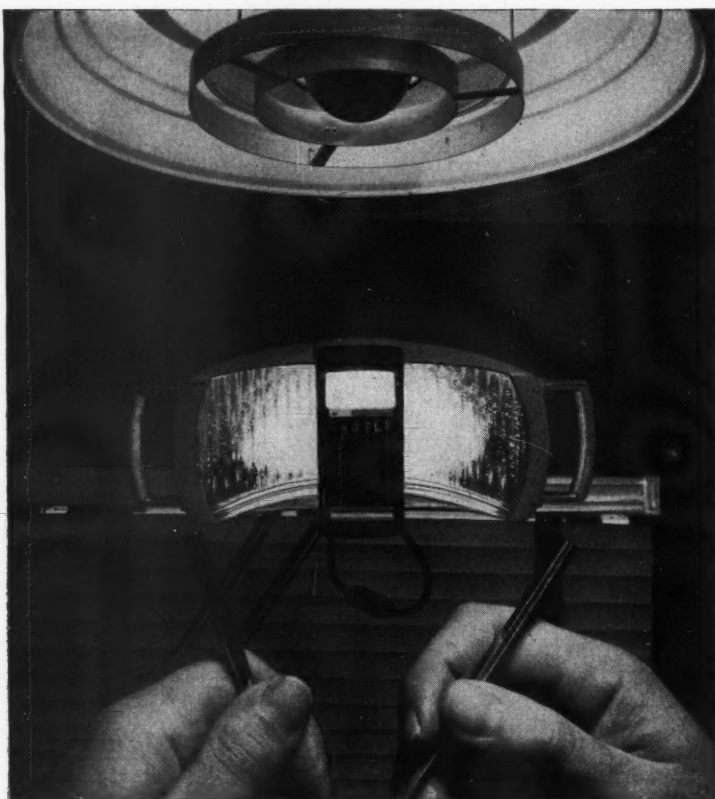
A thought in the approach to the prevention of heart disease past mid-

the ability
to repair . . .



Partials weren't made to be
dropped or abused . . . but they are.
Changes may become necessary.
G-3 partials can be repaired, adjusted
or modified easily, inexpensively *and*
safely . . . another case of true gold
economy, using the best there is,
Ney-Oro G-3.

THE J. M. NEY COMPANY  *Gold* SINCE 1812
HARTFORD CONN.



What does your patient see from the chair?

If the patient sees this pair of lights, she may be aware of their good design...

But—she has no way of knowing these lights mean as much to her own dental health as to your own comfort.

These lights—the Castle PV and GV—are a *matched pair* that help make your work more efficient—by making your day less tiring.

Multi-beam PanoVision lamp illuminates oral cavity with diffuse, glareless light. And, directly over the patient, Castle's General-Vision Light illuminates office and work area.

This *balanced lighting* keeps contrasts low, reduces eye-strain and fatigue... makes your work easier. To see how, phone your Castle dealer, or write:

Castle LIGHTS AND STERILIZERS

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PREVENT RUST IN YOUR STERILIZER

Simply add Nitrodene to the water in sterilizer for positive protection from the ravages of rust. Full directions included.

There is no safer or more effective rust preventive than Nitrodene.

8 oz. - \$1.60

Sole manufacturer
CONTINENTAL CHEMICAL CO.
GALESBURG, ILLINOIS, U. S. A.

life is that it is not a manifestation of a local disease but is an over-all body change, particularly with regard to nutrition. By proper evaluation of the patient, it seems likely that different diseases, such as coronary heart disease, may be detected long before heart disease develops.

The disturbed mechanism which begins within the body, associated with reduced gland function, may be dependent upon heredity in part. However, other factors play a role in producing heart disease. Habits that are acquired by the patients are important from the standpoint of advising these persons.

Smoking is definitely deleterious, as is the over-use of alcohol. Occupation, habits, and lack of emotional control in everyday life may weaken a diseased coronary artery system. Over-indulgence in foods, particularly fats, rich foods and sugars, tends to exhaust the process of proper digestion and assimilation of foods. The inability to utilize sugar may produce a biologic strain on the body of the older person and may be a factor in the production of heart disease. Reflexes arising from visceral disturbances may cause coronary heart disease in hearts that have otherwise no symptoms.

High blood pressure plays a role in the occurrence of heart disease. The two factors concerned here are (1) the production of renin and angiotonin due to anoxia of tissue, particularly the kidney, which is the humeral mechanism for its cause, and (2) the sympathetic nervous system which controls the tension that many individuals with hypertension develop.

Lipotropic agents should be considered for a disturbed fat metabolism. The maintenance of adequate protein in the diet of persons in the mid-phase of life is also important. Obesity should be avoided. Excessive use of salt is to be avoided. The importance of diet must be stressed in these persons.

Kountz, William B.: *Heart Disease in Mid-life*, J. Michigan M. Soc. 52: 1293-1297 (December) 1953.



*thank you, doctor...
you've helped me
so much*

Today...confused by so many extravagant and contradictory tooth paste claims...patients often seek professional advice on oral hygiene. You can be sure of your patient's continued confidence in your professional counsel when you recommend...

Chloresium[®]

Tooth Paste

promoted exclusively to the dental profession

- cleans teeth safely and effectively
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Prophylactic adjunct, therapeutic and deodorizing agent, CHLORESIUM TOOTH PASTE contains the same highly concentrated, purified water-soluble chlorophyll derivatives as A.M.A. Council-Accepted CHLORESIUM OINTMENT and SOLUTION.

Literature and samples on request

Rystan company

MOUNT VERNON, N. Y.

Contra- Angles



The Opera House is Open Every Night

The opera house was over the pool room and the athletic field was next to the gashouse. Traveling stock companies gave flavor to the winter season's entertainment. The cast was versatile if not talented. The admission price was right: Seventy-five cents bought a first floor seat, a quarter would put you in the gallery. If you were a boy and peddled the handbills that announced the short theatrical season, you sat at the top of the balcony, free.

Along the river, down by the gashouse, baseball teams played in the long summer afternoons. And when frost covered the ponds, the football goal posts stood out stark in front of the gas tank. There was a small grandstand that gave some protection against the hot sun or the autumn chill. Most spectators stood or moved about the field to follow the play. Admission price was twenty-five cents.

Now the opera house is open every night and the athletic fare features all sports. This all comes through the miracle of television.

This medium has changed the pattern of living, and not always for the better. The hospitable New Year's Day reception has given way to the several "bowl" football games. The pleasant evening of family visiting has gone out in favor of the silent gathering of people before a television screen. United States senators have degraded themselves as they squabbled among themselves in the public eye of the camera as household chores went undone. People are distracted from their reading by noisy figures jumping around on a glass panel—some emoting, some cavorting, some peddling.

There are some signs that televi-

sion is committing *hara-kiri*. The commercials have become longer and sillier, the pitchmen and even the more objectionable pitchwomen toss their "y'see," or "wonderful," into every other sentence. "Y'see" is a stridently uttered, newly coined word that is used to imply: if you don't see the validity in the commercial spiel you are deaf, dumb, and blind. "Wonderful," a proper and effective word in its place, can usually be counted to be heard at least once every minute during a commercial announcement.

Everything is "wonderful:" a hunk of processed cheese, a 52-below-zero refrigerator, a tantalizing tattoo-like lipstick, or a can of calorie-expurged beer. "Wonderful" was, before TV, a word with more feminine shadings of usage. With television the word has grown in sugary popularity with the men announcers. This may have some deep symbolic meaning that escapes me.

Many of the dramatic skits and situation comedies that are presented on half-hour programs are so hec-



FAST CUTTING • LONG LASTING EASY ON YOUR PATIENTS

For accurate, smooth cavity preparation, use dentistry's finest burs . . . S. S. White Carbide Burs. Exceptionally hard cutting edges for fast cool action and long life. Greater blade-space gives deeper cuts. No clogging when used on dentin or amalgam. All sizes and forms for latch-type angles, straight hand pieces, and taper shank angles. You can save up to 37 cents per bur by ordering quantities of 36 and up.

THE S. S. WHITE DENTAL MANUFACTURING CO.

PHILADELPHIA 5, PA.

tored for sufficient time that they are totally unsatisfactory as an entertainment form. These compressed versions are as unsatisfactory as reading a literary classic that has been cut down from 100,000 words to 1,000. It takes time to develop a story or a theme on a stage or on paper. There are places where terseness is a virtue and occasionally even an art. On television it can be frustrating.

To escape these devitalized television versions of drama or comedy, people seem to be returning to the

motion picture theatres. It can be said for the movies that they take sufficient time to develop a theme and they do not interrupt the continuity with commercial plugs. If one need relieve himself during a motion picture he must leave on his own time during the dramatic action. The commercials in television at least afford one a physiologic convenience.

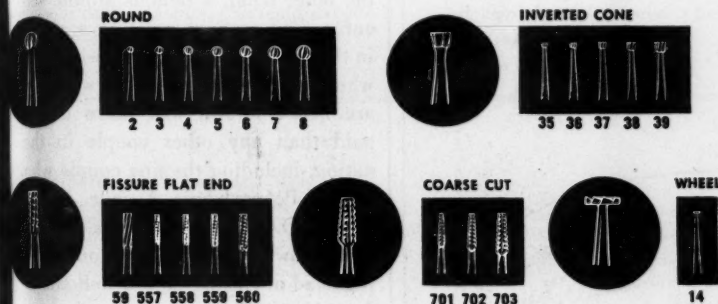
There is an actual phenomenon creeping over the land wherein people are leaving their TV receivers to stand mute and dark while the family

is entertaining. It is quite possible now to spend an evening with friends sitting before the fire in pleasant conversation without being forced to watch some clown cavort or some dame unleash her anatomy.

There was a time when a sports fan sat in shirt sleeves in the pleasant summer sun and between roasted peanuts and beer cheered his baseball team to win, or snarled a hiss at their opponents. Now the baseball fan sits in a semi-dark room without benefit of sunlight or the noisy human companionship of the ball park. He drinks his beer in solitary silence as he watches action on a screen. He doesn't have a lusty boo left in him.

The crisp air of autumn, the big masses of chrysanthemums on the girls, the swig of whiskey from a hip flask were all parts of the ritual of football. The glow from an afternoon in the open and from the nips from the bottle was long remembered. Now we are sedentary football fans, sitting in an 80° room and lifting a highball.

(Continued on page 134)



FOR THE CHILD PATIENT

Constructive, educational give-aways are valuable aids in dealing with your child patients. We have 12 different rubber molds with which your dental assistant can produce quickly, from surplus stone or plaster, a quantity of models of interesting animals for this purpose.

PRICE—Complete set of 12 molds.....\$10.00
Individual moldsEach \$ 1.00

(Above illustration reduced. Actual size of model 2 5/16"x1 5/8".)

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"The House of A Thousand Models"
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SPECIAL ASSORTMENTS

for latch type angles

S. S. White Carbide Bur Assortment No. 2
1 each Nos. 2, 4, 35, 37, 559, 702

for taper shank angles

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S. S. White Carbide Bur Assortment No. 3
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1 each R.A. Nos. 2, 4, 35, 39, 558, 559, 702
2 R.A. No. 37

CLINICAL AND LABORATORY SUGGESTIONS

(See pages 126 and 127)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

DENTAL DIGEST
708 Church Street
Evanston, Illinois

From: _____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.

\$10 will be paid on publication for each suggestion that is used.

If the sedentary life leads to softness and softness leads to disease, television is pushing us down the road to infirmity. Nature intended us to use our muscles, to expose ourselves to fresh air and sunshine.

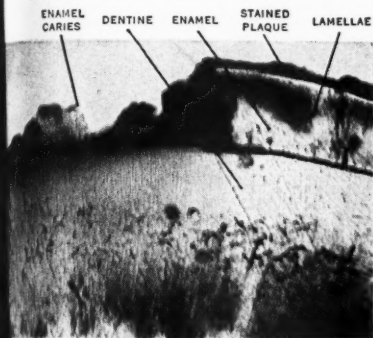
Not long ago I was reading the "Information Please Almanac" for 1955 and the names of the people listed in the "Who's Who" section of that book. Most of them were punks born 25 or 35 years ago whose only fame came from a larynx that could gurgle a song, feet that could fly in a dance, or a torso that was heavily endowed with lustful overtones. Many other fine young men and women born 25 to 35 years ago have won substantial fame in the arts and sciences, in the military, business, and professional worlds. They are not listed in "Who's Who"!

The pains and aches of a TV master of ceremonies are headline news. On the other hand, a famous atomic scientist died without creating a ripple in the news. A husband and wife team who play-act a husband and wife role are better known and more highly paid than any other couple in the nation, including the fine couple who live in Pennsylvania Avenue, Washington, D.C. Joe Friday is almost as well known as J. Edgar Hoover. A full head of curling hair, a well aligned dentition, and a crevice in the buccinator muscle have brought wealth to a second-rate musician and the sneers of men who believe themselves more hormonally endowed—that is, endowed with andricity. Hypomaniac idiots who babble and agitate are better known than the Governor of your state by many people in your state.

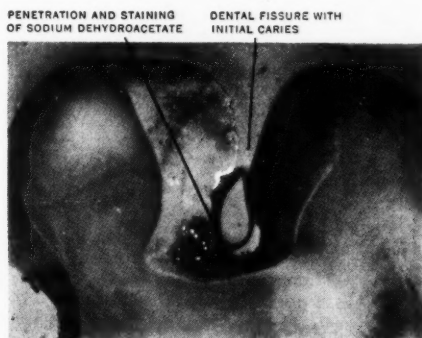
Some of these shows cost six figures to present in a one-hour session. One clown has signed a contract for millions of dollars. A guest appearance, which usually means a walk-on to read a gag written by somebody else, may bring \$5,000. A gent with a receding hairline or with an eroded area on his crown, or a gal with a flatness in her anterior thoracic wall consults a wigmaker or a prosthodontist before appearing before the cameras to collect more for 15 min-

(Continued on page 138)

RETENTION FROM ANOTHER LEADING DENTAL SCHOOL



Micrograph showing cross-section showing reddish-brown and sodium dehydroacetate in plaque and surface of carious lesion. (Salicylaldehyde reaction.)

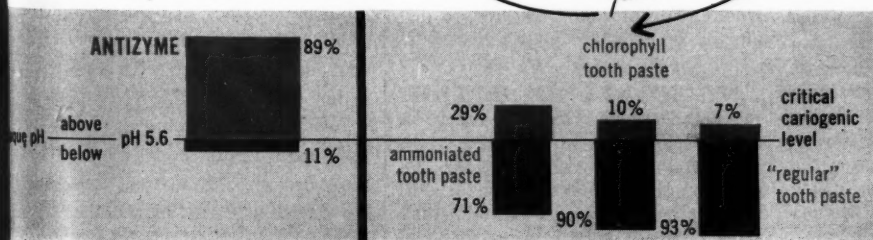


Tooth cross-section showing red stained sodium dehydroacetate in exposed protein of developmental groove. (Schiff's differential stain.)

determinations after sugar rinse,
to 24 hours after brushing, prove protection

Antizyme

24 hour protection

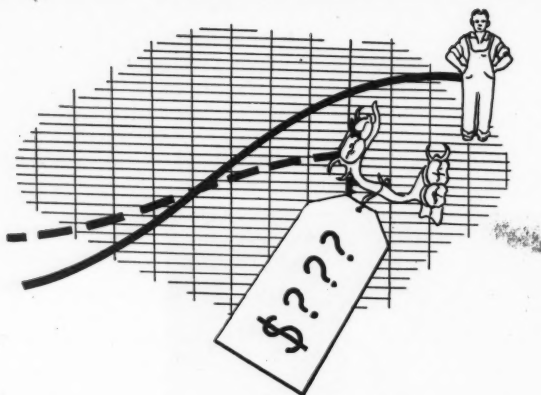


Antizyme TOOTH PASTE

original continuous action tooth paste

ROBERT PHARMACAL COMPANY DIVISION OF THE LAMBERT COMPANY, Jersey City 6, N. J.

In your ORAL HYGIENE this month



"Setting Fees Is No Problem"

"The general concern about the size of fees is surprising, considering that a quick, easy solution is available right now to every practitioner," writes M. Travascio. "The dentist's 'pay check' results from service charges he establishes himself, and if he wishes, he is free to double or even triple his fees, starting with the next patient who sits in his chair. It is as simple as that."

Of course higher fees may mean fewer patients as "it is not yet a law that men and women must see their dentist twice a year."

★ ★ ★

"I Am an Alcoholic Dentist," confesses an author who remains anonymous (in accord with the tradition of the group to which he belongs). This dentist has traveled every step of the way from casual, social drinking to uncontrolled, compulsive overdrinking—and back again to the abstemiousness which is the only safe course for any alcoholic to pursue.

★ ★ ★

"What Is a Tooth Worth?" Doctor G. W. Garleb suggests that a tooth is worth whatever the patient *thinks* it's worth, and that the value he places upon it is in direct relation to the importance he attaches to appearance and health. One woman who sued her dentist for \$10,000, claiming he extracted the wrong tooth, was awarded \$3,500 by the jury which heard the case. The article is interesting and informative.

"Triple Threat Contender" is Doctor Donald E. Callar who not only carries on a busy dental practice, but regularly wins national honors as a marksman and achieves ever increasing fame as a maker of precision firearms. Omer Henry writes the story.

★ ★ ★

Doctor Philip Parker decided to solve some of his dental office maintenance and decoration problems by using the "do-it-yourself" technique. Now his operatory is spic and span (and easy to keep that way) and his reception room is handsomely modern with a huge photo-mural creating an illusion of airy, outdoor space. Doctor Parker tells how he planned and carried out the project.

★ ★ ★

"An Extraction May Be Serious Business," warns Doctor Gregor H. Glitzke. Dentists who dismiss their extraction cases with the terse, familiar admonition to "use a salt water rinse for a few days," may want to amplify their remarks—and remedy—to conform to a more modern concept of the importance of post-operative care after reading this article.

★ ★ ★

"Don't overlook the regular monthly departments and features in this issue. They're all there: "Dentists in the News," "Ask Oral Hygiene," "So You Know Something About Dentistry!," "Technique of the Month," and all of the rest.

(Continued from page 134)

utes than most of our American families earn in one year.

The opera house is now open every night—and so is the peep show, the strip tease, the old vaudeville routines. They are all on television.

I must stop now. Sorry to be so abrupt, but I must hurry home to turn on the TV set for the evening.

—E.J.R.

Fizzy Drinks

IN THE HOUSE of Commons Doctor Barnett Stross, on the adjournment motion, again drew attention to the report in the United States of the Consumers Union on the acidity of cola drinks.

Degree of Acidity Reported

Assuming that the pH of water was 7, club soda was given as 4-7, sarsaparilla as 4-0, root beer as 3-4, bottled orangeade as 3-2, and the colas as 2-4, although Doctor Stross thought it was 2-6. Thus the acidity of cola drinks was roughly that of vinegar.

Analysis of Cola Drinks—The critical acidity measurement was pH 3-5 for most people, because the saliva of the mouth of a human being could not neutralize anything more acid. Doctor McCay, professor of nutrition at Cornell University, New York, in 1950, giving evidence to a select committee of Congress, gave the following analysis of cola drinks: phosphoric acid 0-055 per cent, sugar 10 per cent, some caffeine, coloring matter, water, and flavoring.

Effects of Immersion in Cola—Human teeth, immersed in a solution of cola, became soft in two days. After six weeks rats which had been given cola to drink with their food each day, showed extensive erosion of their molar teeth. With orange juice there was only slight marking on the teeth, and none at all with tomato juice or water.

Development of Extra Sensitivity—Professor McCay had to abandon experiments on human volunteers because of the sensitivity which developed in the teeth. Doctor McCay had deplored the use of carbonated drinks

THE COLES ELECTRONIC

Pulp Tester and Diagnostic Instrument



DIMENSIONS: 6½"x4½"x4¾".
APPROXIMATE NET WEIGHT: 4 pounds

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OUTSTANDING and ACCURATE — the result of years of research

1. **NEW—NON-SHOCKING.** Rectified and filtered current disposes of patient fears.
2. **NEW—**A differential diagnosis of tooth conditions may be made. Instrument is *not* affected by voltage drop or other variables.
3. **NEW—RELIABLE.** Current flow through the tooth may be definitely established by meter registration.
4. **NEW—**Outlets for ionization techniques.
5. **NEW—**Outlets for COLES Cold Lamp for soft tissue transillumination.
6. **NEW—**Beautiful and artistic in appearance.
7. **NEW—**Baked enamel exterior in rich Ivory Cream, Jade Green, Coral, or other colors to match equipment.
8. **NEW—**The instrument may be hung on the wall or placed on the dental tray.

Coles Electronic Corp., 1207 Race St., Philadelphia 7, Pa.

Please send me descriptive literature listed below:

- ☐ Literature on your Model PT-1 Pulp Tester
- ☐ Literature on your attachments for same
- ☐ Literature on Coles Electronic Scalpel (the improved Radiosurg Scalpel)

Remarks _____

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Street _____ City _____ State _____

which were as acid as this, not only because of the damage to the teeth, but also because of peptic ulceration and because *young children should not have repeated doses of caffeine.*

Publication of Formula Requested
—Now that sugar was unrationed cola drinks were likely to be drunk more freely. Doctor Stross asked whether by changing the composition the acidity could not be altered. He also asked the Minister of Food to insist on the formula of these drinks being published on the label. If physicians and dentists knew how much sugar and phosphoric acid were in the drinks they would understand the significance and be able to explain to the public what it meant.

Evidence Believed Inconclusive

Doctor Charles Hill, parliamentary secretary to the Ministry of Food, pointed out that while human teeth left in cola for 72 hours lost 5.5-10.2 per cent, owing to the attack on the

calcium, in fresh lemon juice the loss would have been 35 per cent. These extracted teeth had no protective layer of mucin and were not washed in the alkaline salivary juice which played an important part in neutralizing the acid.

Equivalent Human Intake—Doctor Hill pointed out that the amount of cola that would have to be drunk by an adult to achieve the same conditions as those represented by the small amount of cola drunk by the modest-sized rat was 25 bottles of cola a day.

Relative Erosive Action of Other Drinks—The Government Chemist, Doctor Hill continued, had worked out the pHs of other drinks in a solution of one in three, and the results were:

- Orange barley-water 3
- Lime-juice cordial 2-8
- Lemon squash 2.75
- Grapefruit 2.7
- Orange squash 2.95

Investigations, reported in 1951 to

the Food Standards Committee, showed that British fruit cordials and squashes, diluted with four parts of water as usually drunk, had a greater erosive action than phosphoric-acid drinks.

Caffeine Content Equal to that of Coffee—Doctor Hill did not believe there was real danger in the caffeine content. There was as much caffeine in a large bottle of cola drink as in a cup of coffee—and so what?

Investigation of Soft Drinks Contemplated—The Food Standards Committee intended to consider the whole range of soft drinks but Doctor Hill stated that this did not imply that it was believed that consumption of such drinks was fraught with significant danger.

Adapted from *Lancet* No. 6807: 363-364 (February 13) 1954.

BUY SECURITY BONDS

Local Effects of Certain Medicaments on the Teeth

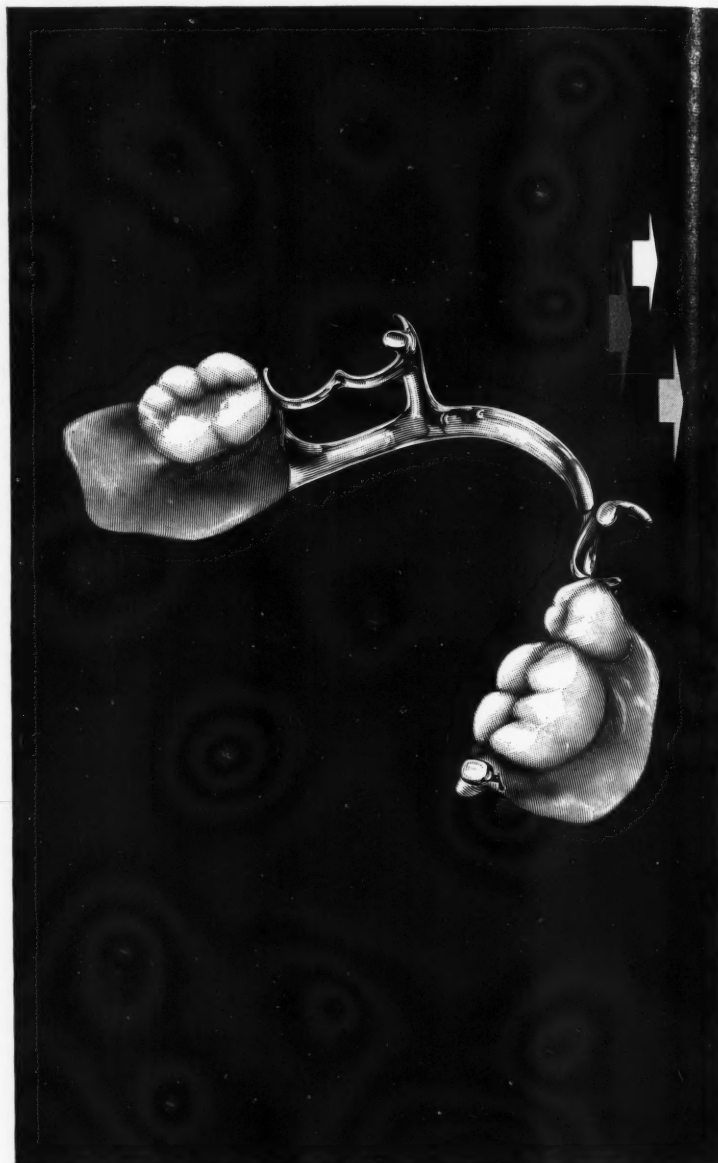
P. M. C. JAMES, I.D.S.R.C.S., D.P.D.,
and G. J. PARFITT, M.R.C.S.,
L.R.C.P., F.D.S.

Acute Caries in Children

It is a common experience for dental surgeons to be confronted by small children, aged from two years upwards, suffering from gross caries of their deciduous teeth. This condition may arise from a variety of causes, and it is often difficult to decide what is the principal factor in a particular case. If, however, a child known to have normal dental structures suddenly develops rapid caries affecting particularly the labial and buccal surfaces of his teeth, the possibility of chemical damage must be considered. It has been observed that such damage often occurs after the protracted use of some of the commonly used iron tonics.

Iron Tonics Tested — Certain of these iron tonics are extremely acid. Representative samples, tested with a Cambridge pH meter, gave the following hydrogen-ion concentrations (see chart below).

Deleterious Effect of Acids on Teeth — It was shown that teeth left in a solution of pH 4.5 for twelve hours suffered some degree of decalcification, and many cases are reported of dental damage following the pro-



	Undiluted pH	Diluted to 50 Per cent with water pH
Syrupus ferrous phosphorus cobalt	1.5	1.9
Mistura ferrous sulphur pro infant		
National Formulary	1.67	2.28
Elixir ferrous gluconate, R. F. H.	3.52	3.8
Mistura ferrous ethyl ammonia cit.,		
National Formulary	6.66	7.7
"Colliron"	8.56	8.87

longed and regular sipping of pure lemon juice (pH about 2.5). It was demonstrated that the amount of enamel decalcification that occurs when a tooth is immersed in an acid solution does not depend entirely on

the pH of the solution but also on the nature of the acid. For example, N/100 lactic acid, with a pH of 2.9, in some circumstances produced etching of the enamel, whereas N/100 hydrochloric acid (pH 2.0) did not.

Effects of Iron Tonics on Teeth Investigated

A laboratory test to ascertain the effect on the teeth of certain stock iron tonics was carried out. Sound teeth were suspended for a week in the various liquids at blood temperature with part of the crown immersed beneath the surface. In this case the resultant degree of damage to the teeth was proportional to the acidity of the solution. Syrupus ferrous phosphorus cobalt caused the most damage, the exposed enamel flaking freely away from the cusps of the tooth. Mistura ferrous sulphur produced

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Are more Satisfying...

ONLY TECHNICIANS ESPECIALLY TRAINED IN ADVANCED DENTAL PROSTHETICS AND SKILLED IN LABORATORY TECHNIQUES PRODUCE VITALLIUM RESTORATIONS. THE TESTED AND CERTIFIED ALLOY AND QUALITY-CONTROLLED PROCEDURES ENABLE THEM TO DESIGN AND CAST FULL AND PARTIAL DENTURES THAT ARE CONTINUALLY ADVANCING THE STANDARDS OF PROSTHETICS.

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AUSTENAL LABORATORIES, INC.
NEW YORK CHICAGO

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severe etching and decalcification of the enamel, which could be scraped off the surface with a finger-nail. Elixir ferrous gluconate produced slight etching, with milky-white decalcified areas. No macroscopic effect was observed on the teeth immersed in mistura ferrous et ammonia cit. or colliron.

Method of Administration—It is the custom to advise that some iron tonics should be taken through a straw or a glass tube, but this presents practical difficulties, and in small children the parent usually gives it undiluted from a teaspoon, the child

sucking the liquid over his upper incisor teeth. If this practice is continued for long the teeth often present a typical clinical picture—decalcification of the labial surfaces of the upper incisor teeth, usually accompanied by dental caries. If, as is often the case, the tonic is sweetened with syrup, the risk of caries will be considerably increased. In severe cases the teeth eventually disintegrate, break off level with the gum, and leave roots that quickly become diseased.

Effects of Syrup and Substitutes—Syrup per se has been observed to cause damage to the teeth. The orig-

Others Have Tried BS POLISHERS Why Not You?

Many dentists have sent in the coupon below and found out why BS Polishers are preferred over many others. They can readily understand why this soft, flexible rubber polisher makes a patient feel safe and comfortable, also why it is easy for it to clean and polish every tooth to a lustre brightness. Why don't you find out these facts for yourself? Send the coupon in now!



BS POLISHERS ARE SMALLER AND MORE CONVENIENT TO USE

Young Dental Mfg. Co.

St. Louis 8, Mo.

Gentlemen:

Without any obligation send us one of your BS POLISHERS—ABSOLUTELY FREE.

NAME

ADDRESS

CITY

STATE

inal sugar dummy, where the parent wrapped a lump of sugar in a handkerchief and thrust it in the child's mouth, has been popularly superseded by the immersion of a rubber dummy in rose-hip or blackcurrant syrup before use, with frequent replenishments throughout the day and night. This, if continued for any length of time, results in startling destruction of nearly all the teeth. The pH of a popular brand of blackcurrant syrup is 3.

Conclusion

It is not suggested that dental damage invariably follows the use of iron tonics. The amount of harm depends on the acidity of the tonic; on the frequency, length, and method of administration; and on individual susceptibility. But the regular introduction into the mouth of highly acid and syrupy fluids is obviously a potential risk to the dental structures.

Adapted from *British Medical Journal* No. 4848:1252-1253 (Dec. 5) 1953.

Rational Mouth Hygiene...

LAVORIS
REG. U.S. PAT. OFF.
MOUTHWASH
and GARGLE

Lavoris does not depend upon the questionable efficiency of strong germicidal agents. It has a more rational action—it coagulates and removes mucus accumulations and germ-harboring debris. Furthermore, its astringent, invigorating action will improve the tone and resistance of the tissues to bacterial invasion.

A PRODUCT
 OF MERIT FOR
 50
 YEARS

THE LAVORIS COMPANY, Minneapolis, Minn.

See second cover

D.D.3

UNIVERSAL DENTAL CO.
 48TH AT BROWN STS., PHILADELPHIA 39, PA.

Please send free literature described in advertisement.

Dr. _____

Address _____

City _____

See page 97

D.D.3

ANACIN
 THE WHITEHALL PHARMACAL CO.
 22 EAST 40TH ST., NEW YORK 16, N.Y.

Please send professional samples of Anacin.

Dr. _____

Address _____

City _____

See page 98

D.D.3

ROCKY MOUNTAIN METAL PRODUCTS CO.
 BOX 1887, DENVER 1, COLO.

Please send:
☐ Denta-Weld Booklet
☐ Space Maintainer Booklet

Dr. _____

Address _____

City _____

See page 99

E. R. SQUIBB & SONS
 745 FIFTH AVE., NEW YORK, N.Y.

Please send Pentids information.

Dr. _____

Address _____

City _____

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D.D.3

COLUMBUS DENTAL MFG. CO.
 COLUMBUS 6, OHIO

Please send information concerning Steele's Trupontic teeth.

Dr. _____

Address _____

City _____

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D.D.3

PAN-L-VIEW
 708 CHURCH ST., EVANSTON, ILL.

Enclosed is my \$3.00 for Pan-L-View.

Dr. _____

Address _____

City _____

D.D.3

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D.D.3

WILLIAMS-HUFF CO.
 BANKERS MORTGAGE BUILDING,
 HOUSTON, TEXAS.

Please send information on the Feather-bite protective mouthpiece.

Dr. _____

Address _____

City _____

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D.D.3

THE J. M. NEY CO.
 HARTFORD 1, CONN.

Please send information concerning Ney Golds.

Dr. _____

Address _____

City _____

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D.D.3

WILMOT CASTLE CO.
 1123 UNIVERSITY AVE., ROCHESTER 7, N.Y.

Please send information concerning Castle PV and GV Lights.

Dr. _____

Address _____

City _____